The Mining Journal

London, May 10, 1957

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Vol. 248 **No. 6351**

Established 1835

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Published each Friday by

THE MINING JOURNAL LTD.

Directors
E. Baliol Scott (*Chairman*) U. Baliol Scott (*Managing*)
G. A. Baliol Scott R. A. Ellefsen

15, WILSON STREET, LONDON, E.C.2.

Telegraphic Tutwork London
Telephone MONarch 2567 (3 lines)

Annual Subscription £2 10s. Single copy ninepence

Are Higher U.S. Lead-Zinc Tariffs Coming?

THERE is no doubt of the underlying reason for the sharp fall in London Metal Exchange zinc prices in the past week. The cue has been taken from the United States where, over a short period, the East St. Louis price for prime western grade has dropped 1½ c. to 12 c. per lb. In addition to the fall in price there have been reports of properties closing—of which the latest was the announcement by Eagle-Picher Lead and Zinc Mining Co. that it was closing mining and milling plants in Oklahoma, Kansas and Missouri. What seems to have been behind the tumble is a conviction that the stockpiling of lead and zinc will not be continued very much longer. On May 6, Mr. Gordon Gray, of the Office of Defense Mobilization, again repeated that he expected purchases of lead and zinc to continue at least for a while. But such a hesitantly phrased confirmation merely added to the conviction that the whole thing was coming to a halt.

Why should all this have happened? The answer seems to be that the American government has been forced to the conclusion—which *The Mining Journal* has long maintained—that whatever its merits stockpiling is, from a protectionist angle, a hopelessly inefficient method of insulating the domestic industry. It will be recalled that when the Supplemental Stockpile was announced for lead and zinc, there was a general belief that the programme would only last for a year and that if the targets of 200,000 tons of lead and 300,000 tons of zinc had not by then been acquired, so much the worse for the domestic industry. Towards the end of the first year the market turned distinctly weak until it was reassured that the government intended to carry on stockpiling until the goal was achieved. Thereafter, things went more smoothly for a time; partly because of this reassurance and partly because the boom in American industry slowed down the rate of purchase and gave a longer life to the whole programme.

Last year, however, the purchasing rate, especially for zinc, moved up rapidly because of the recession centred on the automobile industry. Once again fears arose that the goals would be achieved before the end of 1956. Once again they were allayed—comfortably before the voting in the Presidential Election—by the statement that the goals of 200,000 tons of lead and 300,000 tons of zinc were never, in fact, fixed and stockpiling was not limited to these figures. At the time, *The Mining Journal* commented that this appeared to give *carte blanche* to the stockpilers and that Congress would be difficult to persuade to vote funds for a programme the end of which could not be foreseen. This view seems now to have prevailed in the U.S. as the result of the growth of what is almost a political crisis.

When Mr. Eisenhower sent his budget to Congress, it was shocked to find that it was for a total of $72,000,000,000 and some people believed that this was a sure guarantee of inflation. In an extraordinary speech Mr. Humphrey, Secretary to the Treasury and a member of Mr. Eisenhower's own government, pointedly said so the day after the budget was released. Since then Mr. Eisenhower has invited Congress to cut his own budget (another unprecedented step) and the Democratic Congress has been reluctant to make cuts

since it would prefer to make them next year in time for the next Congressional Elections. The President is being forced back into the position of having to cut his own budget and the pressure to do so is made the greater because he is being reminded that it was one of his pledges, when he was first elected, to cut the government budget back to a maximum of $60,000,000,000.

With this political background, there seems every reason that the stockpiling programme will be heavily modified and perhaps even jettisoned. It is doubtful whether there is any strategic justification for stockpiling of lead and zinc and the programme is not only exceedingly costly, but much disliked by the industry which it is purporting to help. The American industry's view is that one of the consequences of stockpiling has been to encourage the growth of the non-American lead/zinc mines. In other words it has protected the American industry at the cost of fostering the danger to that industry. On the facts this view is perfectly correct.

What then is likely to happen? The answer must be that it is impossible for the U.S. Administration to drop all protective devices for the lead/zinc industry in view of the Administration's belief in the industry's strategic importance and in view of the continuing low output in Detroit. There seems no alternative to a raising of the tariff and it is our view that this eventuality has got to be reckoned with, as unfortunately the more sensible and cheaper method of direct subsidy to selected mines is not politically acceptable in the United States. The political advantages of a rise in import duties would be that it would help to cut the cost of the budget, satisfy the lead/zinc industry (that is if it went far enough) and buy off some of the opposition to the effort, which Mr. Eisenhower is preparing to make yet again, to get Congress to approve the revised version of G.A.T.T.

A higher American lead/zinc tariff will be a very serious matter for many producers outside that country but there is no point in shirking the fact that it seems more likely now than at any time since Mr. Eisenhower took office.

PROBLEMS OF AUSTRALIAN GOLD MINING

The position of gold mining is, unfortunately, showing signs of becoming increasingly critical, writes our Correspondent in Australia. Production is decreasing, and the lack of incentive has brought about an almost complete cessation of prospecting. While the price remains fixed at a level that restricts profitable operation to a few well-established mines, whose size and grade favour them, it is inevitable that search for new deposits must cease and that marginal propositions must close down unless some adequate support is given, to make them profitable operators, not merely to permit them to pay their way.

It was hoped that the policy of the Commonwealth government in abolishing the periodical increases in the basic wage would stabilize costs, and it did so, but this was nullified by the refusal of the State governments to co-operate; consequently, the cost of living has continued to rise, and with it, the cost of mining. One State only, Victoria, has recently abolished the quarterly increases, and the result is a very satisfactory fall in the cost of living.

The gold mines have done remarkably creditable work against rising costs, by amalgamations and mechanization, and these policies have permitted output to be increased and costs held, or even reduced. But active prospecting has practically ceased, though normal development has been continued on a scale to maintain ore reserves. This is merely holding the ground and is not advancing the industry, for which there is much scope, and which is vital for the survival and prosperity of gold mining.

The Commonwealth government has paid a subsidy under the Gold Mining Industry Assistance Act. This subsidy, which reaches a maximum of £2 per oz., is designed to help the marginal mines, but since it came into force costs have risen, the subsidy is being overtaken, and the position of such mines is becoming worse.

The importance of the gold mining industry does not appear to be recognized politically, though assistance on an adequate scale would ultimately prove of far more importance to the country than many of the more spectacular directions in which assistance is given. The only course open, until the price of gold is increased, is much more substantial financial help directed not only to help actual production, but more particularly to prospecting and development, so that the industry may progress instead of remaining static, or as is the case, declining.

THE MALAYAN TIN INDUSTRY AFTER INDEPENDENCE

While Singapore continues to be in some ferment following its debates on the London agreement on self-government, Malaya appears to be moving tranquilly towards independence. In the last week two reassuring statements have been made about government intentions in economic and financial policy after independence has been achieved.

Speaking at the opening of a new tin mining research station, Tengku Abdul Rahman, said that the government would do all that they could to help any company—whether foreign or domestic—which has the interests of the Malayan tin mining industry at heart. He assured leaders of the mining industry they need have no fear as to their future or the future welfare of the industry.

Statements of this kind will become increasingly common and there is no reason to doubt the sincerity of their intention simply because they are so vaguely phrased. It is probable that the Malayan government would want the credit for stimulating tin mining in Malaya to fall on the first "Independent" government. Secondly, it is felt that matters of grave national policy, if possible, should be left till the election of a government under the Independent Constitution. There seems reason to believe that the Malays would welcome capital from other than British sources, not merely because for certain purposes it might be more readily available, but also to enhance the degree of economic independence. Malaya will certainly look to the United States for help with some of her development schemes. At the same time Malaya is aware of the schizophrenic attitude to tin that obtains in the U.S. and it is doubtful if she will look to that country for assistance in developing the tin industry.

Confirmation of this view was given by Colonel H. S. Lee on the following day when, as Minister of Finance, he was addressing the Federal Legislative Council. He assured the Council that with independence the standard of the Malayan dollar would be safeguarded. He went on to say that Malaya would be a free and independent member of the sterling area holding foreign exchange reserves in London and fixing the exchange rate of the Malayan dollar in terms of sterling. He suggested that there would be some technical changes when the Central Bank was established and that the Federation would have the same freedom to determine its own foreign exchange and import policies as other independent members of the sterling area.

In other words, Malaya has no intention of handing over all her dollar receipts automatically as, with certain agreed exceptions, now happens.

However, Colonel Lee went on to say " that the first and fundamental principle of our policy " would be the maintenance of the stability of dollar/sterling exchange " on which depends the normal flow of trade and in large measure the readiness of overseas investors to put new capital or reinvest existing capital in this country." In this context Colonel Lee is recognizing the extent to which Malaya must look to the United Kingdom investors for her development and particularly for her development of tin mining for, if sterling fails as a currency, the United Kingdom will also fail as a source of funds.

It may well be that plans for surveying and exploiting new tin-bearing territory will not be revealed until after Independence, but there is no doubt that the Malayan government are well aware of the importance of maintaining a prosperous tin industry and, with independence achieved, plans should not long be delayed.

World's Growing Metal Needs Discussed at I.M.M. Dinner

PROBLEMS arising from the ever-growing demand for metals were discussed by speakers at the annual dinner of the Institution of Mining and Metallurgy, which took place at the Goldsmiths' Company Hall, London, on Monday, May 6.

In acknowledging the toast of the Institution, which was proposed by Sir Edwin McCarthy, C.B.E., Deputy High Commissioner for Australia, the president, Professor C. W. Dannatt, said that this demand had been met by greater effectiveness in prospecting, greater efficiency in mining operations and the introduction of new techniques and the close control of methods of ore treatment.

The President On Our Prospective Mineral Shortages

Over the past 40 years repeated warnings had been given of the approach of the day when our ore reserves would be finally exhausted. Those warnings had met with little response because scarcity and enhanced value went hand in hand. As time passed methods of treatment that were uneconomic became profitable. Present-day civilization demanded such a vast variety of properties from metallic materials that there was a need for all metals and if, through scarcity, certain of them became very costly, standards of living would be adversely affected.

If graphs were plotted to show the rising consumption of metals they would show the rise to be steep. To ignore such evidence would be to shut one's eyes to a problem that seemed likely in due course to assume major dimensions. In the present state of knowledge there was little the profession could do to delay the arrival of the time when there would be a serious deficiency of at least some metals. Certain obvious steps could be taken; for instance, the collection and recovery of scrap metals and the provision of better protection of metals so that they were not dissipated by corrosion. However, such steps were mere palliatives and what was required was wider knowledge.

Solution of the large variety of related problems should not be left to the vagaries of individual investigators, and the problems were hardly suitable to be dealt with by individual companies or groups of companies which, of necessity, had specialized interests. A co-ordinating body was required to organize long-term planning over the whole field. There must be constant collaboration and consultation between all those who were interested, from the geologist who located the orebody to the engineer who made use of the final product.

" I have no wish to be considered alarmist, and I am not suggesting that immediate action is imperative," said Professor Dannatt, " but I think you will agree that early consideration of the requirements and early effort to solve the more pressing problems would be bound to be advantageous, for, even if one ignores the possible danger of a shortage of metals, the benefits of early action are sure to be highly rewarding ". The matter deserved careful thought by all those who were interested in the future of the mineral industry.

Disagreement with the view that a period of shortage of metals was approaching was expressed by Sir Ronald L. Prain, O.B.E., in replying to the toast of the guests, which had been proposed by Mr. G. Keith Allen, the president-elect. Having studied the subject carefully over the last ten years, he believed that the known reserves of most metals were greater than they had ever been before. Recent work indicated that world reserves of recoverable copper amounted to 80,000,000 tons and there were 190,000,000 tons of possibly recoverable copper.

He did not disagree that there were problems ahead, in the solution of which the Institution had a large part to play. There were the problems involved in winning the copper from the lower grade ores by improved mining and metallurgical methods and of keeping down costs.

Sir Ronald Prain Discusses the Role of the Institution

The Institution had a great and constructive role in the new age which was opening up, not only for the maintenance and safeguarding of technical standards but also for the maintenance of standards of integrity.

Sir Ronald recalled that he had last had the privilege of addressing the Institution in 1952 in the capacity then of President of the British Overseas Mining Association. That Association had been tremendously successful under the recent Budget. It was due largely to its efforts that the Chancellor had introduced the recent concessions for the so-called overseas trading corporations. The Association had been knocking on the door of successive Chancellors for many years and, when other associations had given up the struggle, it obtained from Mr. Macmillan, when he was Chancellor, a promise from which he could not retract.

It appeared that to-day there would be far less need for companies to emigrate, and an illustration had been given of the fallacy, that was always recognized by some, of forming any long-term considerations on the basis of temporary tax laws. " Those laws change constantly," said Sir Ronald, " and emigration of a company, in my opinion, has to be undertaken on grounds other than tax grounds." The concessions were a big stimulus for the mining industry of this country.

Sir Ronald also recalled that in 1952 he had said that the Institution's three principal functions were education, recruitment and the maintenance of technical standards. The technical standards which the Institution safeguarded were probably the highest in the world. In Northern Rhodesia, where there was to-day the most concentrated copper industry in the world, was one of the Institution's branches, and he could testify as to its virility.

Opening up Manitoba

AT the annual meeting of the International Nickel Company of Canada Ltd., held in Toronto on April 24, 1957, Dr. J. F. Thompson, chairman, presented a résumé of the progress achieved to date in Inco's Mystery-Moak Lakes operation in Northern Manitoba. Dr. Thompson stressed that the company regarded this undertaking as one of the important events in its history and one that would have a significant effect on future operations and progress.

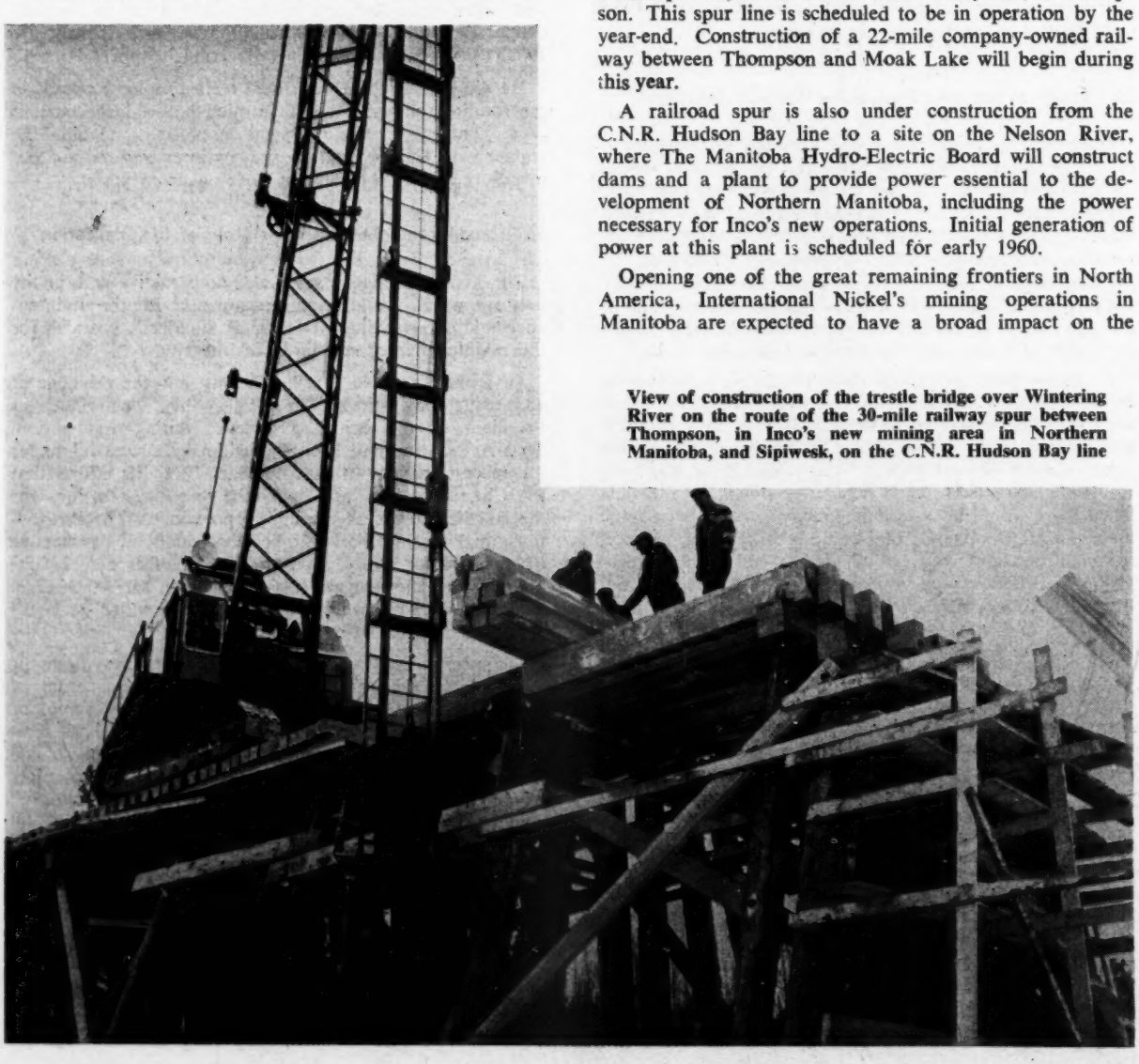
Development of the Mystery-Moak Lakes project is proceeding on schedule and according to plan, with a working force to date of 500 men engaged on various phases of the undertaking. The task of transporting a tremendous tonnage of equipment and supplies into the mining area by tractor train during the winter freeze-up was completed successfully, and construction work is going forward with the utmost speed.

Plant sites have been cleared, accommodation for construction workers have been provided, temporary shops and storage buildings have been erected, and work is under way on roads and foundations for permanent structures. Sinking has been started of a production shaft and a development shaft at the Thompson Mine. On the 700, 1,000 and 1,300-ft. levels of the exploration shaft sunk in 1955, development work for the Moak Lake Mine has commenced, including preparatory work for the sinking of the production shaft.

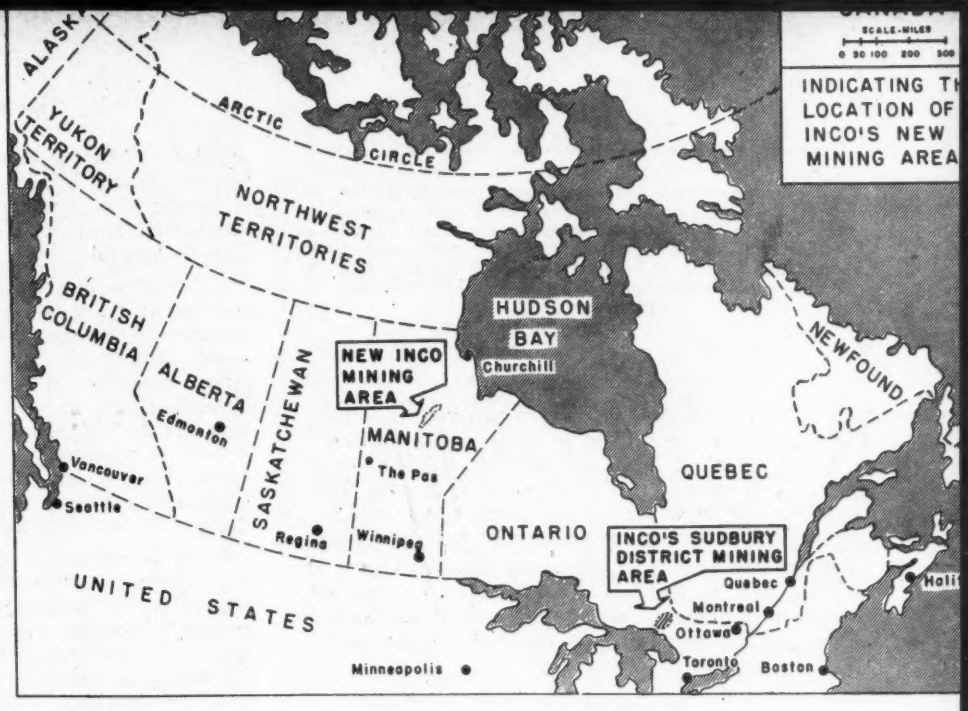
The right-of-way has been cleared and the roadbed started for a 30-mile Canadian National Railways spur from Sipiwesk, on the C.N.R. Hudson Bay line, to Thompson. This spur line is scheduled to be in operation by the year-end. Construction of a 22-mile company-owned railway between Thompson and Moak Lake will begin during this year.

A railroad spur is also under construction from the C.N.R. Hudson Bay line to a site on the Nelson River, where The Manitoba Hydro-Electric Board will construct dams and a plant to provide power essential to the development of Northern Manitoba, including the power necessary for Inco's new operations. Initial generation of power at this plant is scheduled for early 1960.

Opening one of the great remaining frontiers in North America, International Nickel's mining operations in Manitoba are expected to have a broad impact on the



View of construction of the trestle bridge over Wintering River on the route of the 30-mile railway spur between Thompson, in Inco's new mining area in Northern Manitoba, and Sipiwesk, on the C.N.R. Hudson Bay line



Inco's new mining area is here located in relation to the rest of Canada. Inco's Sudbury mining area is also shown

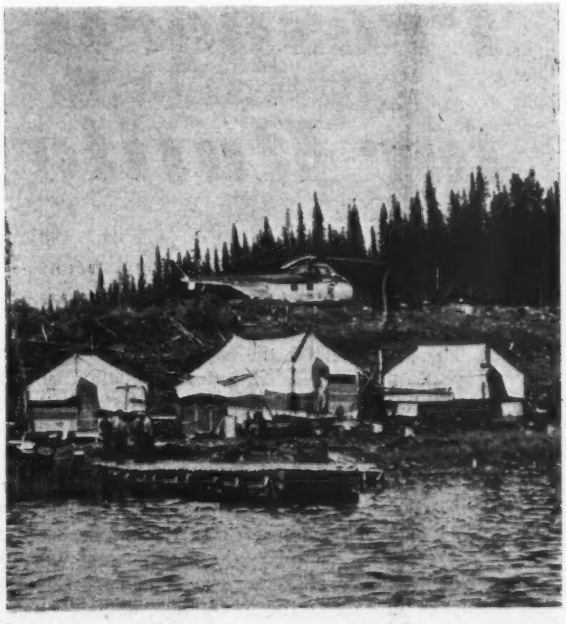
Centre right : A combined camp for drilling and surveying parties, with a helicopter bringing supplies in the background

economy of the Province. Besides adding substantially to the Province's mineral output, the Thompson-Moak Lake undertaking will open up an entire new area of hydro-electric power development.

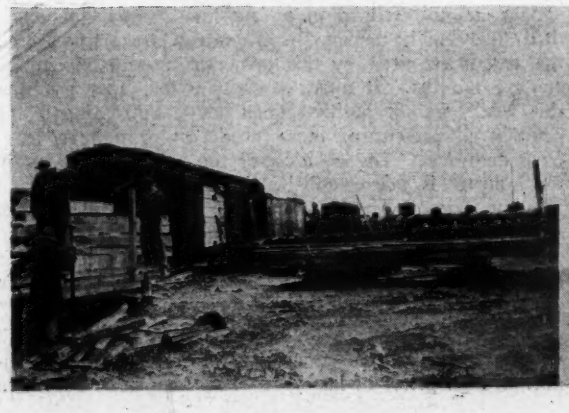
Provision by The Manitoba Hydro-Electric Board for power in excess of the company's requirements is expected to attract other industries, such as forest industries, to a vast area that up to the present has been almost totally devoid of industrial production. The influence of International Nickel's new project will be felt by the entire area and the future changes will be far-reaching in their effect.

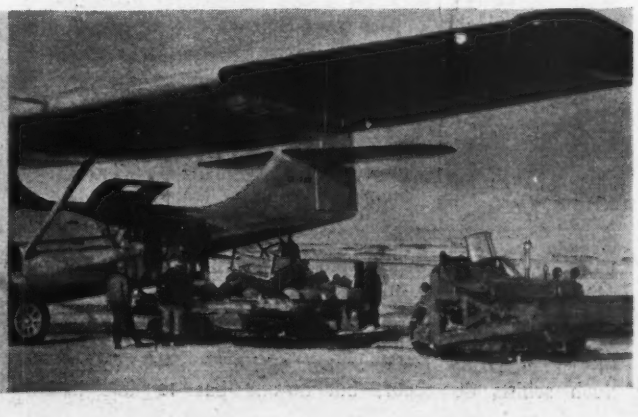
The complexion of the Hudson Bay port of Churchill will undoubtedly undergo a change. Churchill was built as a grain-shipping port, with a predominantly one-way freight movement during a very limited shipping season. With the advent of power development and settlements in Northern Manitoba, Churchill may very well become a busy port with a thriving two-way exchange of freight between western Canada and the United Kingdom and the Continent.

Inco's expenditures for exploration in 1956 were at a record high level, due principally to this increased activity in Manitoba. Prospecting activities in 1957 are expected to be as expensive as those of last year. Indeed, in 1956 these expenditures totalled $8,247,000, of which some $4,374,000 were spent on developments in Manitoba.



Below left shows timber for construction work being loaded on a sleigh at Thicket Portage. The timber will be hauled by "Snowball Express" tractor-sleigh trains up to the mine sites. A similar operation is shown below right, the sleigh being loaded from an aeroplane that has landed on a frozen lake





The following article, condensed from *Quarterly Review of the Australian Mineral Industry, No. 9, Vol. 3*, gives an overall picture of the prospects for rutile on an international horizon. Dr. Dunn is chief mineral economist, Bureau of Mineral Resources, Geology and Geophysics, Australian Department of National Development.

The Prospects for Rutile

By J. A. DUNN

and J. W. MORGAN

RUTILE expansion in the last two years has been largely on the basis of its use as the raw material for titanium metal, as well as for its normal usage in welding rods (the world-wide change-over from riveting to welding in the last two or three years has had a concomitant effect on consumption of welding rods).

It is needless now to emphasize, as it is well known to all interested in the beach sand industry, that the titanium metal industry will expand rapidly, and with it the demand for the mineral raw materials for the metal.

Attention can be drawn to two short-term factors :—

(a) The uncertainty as to which would eventually be the favoured raw material, rutile or ilmenite, and

(b) The signs that for the next perhaps two or three years the suddenly expanded production of rutile was likely to be somewhat out of step with consumption for metal production and normal usages.

The reality of the first warning is illustrated by a recent announcement that at least one new plant to be erected in U.S.A. will not use rutile—it will be based on Sorel slag (derived from ilmenite or ilmenite-magnetite ores). A further factor that may play some part in favouring the use of ilmenite is the recent successful research in Australia by C.S.I.R.O. on a new method for extraction of titanium oxide (TiO_2) from ilmenite. On the other hand, the present relatively smaller mineable world reserves position of rutile *vis-à-vis* ilmenite — a deciding ultimate factor in the eyes of large-scale metal producers —might well swing in favour of rutile if large reserves of rutile-bearing metamorphic schists can be located. Such schists do occur, but no-one has to date had occasion to look for those of sufficiently high grade (the Mexican deposit is the only one developed to date), and on present ideas of prices and costs it would need an orebody of the order of 10 per cent TiO_2, which is not particularly hopeful.

Yet another possible future source of titanium oxide (and metal) is the titanium oxide content of the enormous tonnages of bauxite now being treated throughout the world. Rather over 12,000,000 tons of bauxite are processed annually, at present, for the production of aluminium, and at least 200,000 tons of TiO_2 are contained in the residues after the extraction of alumina. It is not inconceivable that companies operating large alumina plants may, in the future, turn attention to this possible by-product. However, for the present, this possibility need not enter into our considerations.

From the standpoint of economics only, the contest between rutile and ilmenite would be judged simply on the relative price of each in relation to treatment costs. According to opinion given to the writers by producers of titanium tetrachloride (the first stage in metal production), the break-even price for rutile was of the order of £65-£70, f.o.b. in 1956.

But price is not the deciding factor if rutile resources cannot support a long-term metal industry of the size which metal producers visualize in the future. In that case, on resources known to date, ilmenite becomes the favoured eventual raw material.

We now come to factor (b) above, to which varied interpretations seem to have been given. It is not uncommon for production capacity of a raw material to get out of step with rising consumption. By and large over the years it has been the norm of the mining industry for world production capacity to be well in excess of world demand—shortages have been more characteristic of post-war years, and generally for special reasons. During expansion of a new metal in particular, the rising demand for the raw material, and consequent early high prices, naturally so stimulates production of the raw material that it may forge ahead of actual demand for a while, until some sort of balance is reached in the development of both metal and raw material.

The Short-Term Market Outlook

Such an imbalance, to which we previously drew attention, has been reached for the time being, as is illustrated by the recent falls in the cash price for rutile, and the absence of buying interest. Established and projected new production capacity during 1957 totals 150,000 tons of rutile. If this production figure were realized it represents a 66 per cent increase over the 1956 production and 150 per cent over that of 1955. There should be no need to point out that buyer interest is little likely to be renewed and demand surge forward to the extent required by this projected production in the coming months. It must be emphasized, however, that this weak market position does not unduly disturb the position at present of those producers who have long-term contracts. The position of the larger producers in the industry is well established in the normal usages, and to some extent in metal usage, and the recent high prices were not of great moment to them. If those contemplating entering the industry now are certain of their prices, market, and costs, then their decision is a simple matter of economics.

In estimating the eventual price level and demand it would be inadvisable to anticipate a return to the abnormal high prices of last year. The Australian quotation

of £60-62, f.o.b. at the end of January, is probably partly related to the present shipping problems. As remarked above, in 1956 it was estimated that the probable break-even level for rutile in competition with ilmenite would be around £65-70 a ton f.o.b. Should the competition between rutile and ilmenite become real, this could well be the general price level for rutile, allowing, of course, for changes due to freights, prices of ilmenite, and costs and methods of treatment. If, during the next few months, producers are able and willing to drop their prices to yet a lower level, there could well be some revival of buying by metal producers and other consumers to stockpile against the time when increased metal-producing capacity becomes available for operation.

Beach Sands Easily Worked

The ease with which the beach sand type of deposit can be prospected and exploited is a temptation to the rapid opening up of new leases, and can lead to over-production within a very short period. The present projected scale of operations on the ilmenite deposits in Western Australia, is regarded by the writers as reasonable at the moment. It would be unfortunate to add unduly at this stage to existing marketing problems, and those contemplating entering the industry should examine carefully the future marketing factors, having in mind existing programmes.

The place of the small producer, holding areas containing limited reserves of such minerals as rutile, is a question to which the investor and those with direct interest in the industry should give some thought. The position is very different from that of most other minerals.

Production in N.S.W. and Western Australia

In New South Wales, the production of rutile and zircon is now third in value to production of silver-lead-zinc and coal. In the past year—1956—value of rutile and zircon was £A4,500,000. Value in 1957 is expected to exceed this figure, but modification can be expected, not only by the fall in price influencing established companies, but also from its effects upon companies now in process of equipment, some of which have been planned at metal prices well above those current, to work sands that may be uneconomic under altered conditions. This may well cause a slowing down in expansion of beach mining.

While relative proportions of rutile and zircon are, in general, similar, wide variation can occur from one locality to another, but in the long run, quantities approximate one another.

Western Australian ilmenite (free from chromium) is being produced in increasing quantity, and an annual output of 120,000 tons is considered to be close to achievement. Increasing production of this mineral, and improvements in its metallurgy, are expected to have a curbing effect upon the price of rutile.

Selling Mining Machinery in Bolivia

The following article is condensed from a market report on mining machinery for Bolivia circulated by The Export Services Branch.

METALLIFEROUS mining is the most important industry in Bolivia. The export of mineral ores and concentrates have a gross value of over U.S.$100,000,000 annually and account for about 97 per cent of Bolivia's gross earnings of foreign exchange.

All the machinery used in the mines is imported. It is one of the largest items among Bolivian imports and has been increasing steadily in both volume and value in recent years. The United Kingdom has obtained only a small part of this trade, about U.S.$120,000 in 1955 from a total of more than $6,500,000. The market is highly competitive, but British exporters should be able to obtain a larger share, if a special effort is made.

Bolivia is the third largest producer of tin ore in the world, and a substantial producer of wolfram, antimony, lead, zinc, copper, gold, silver and other minerals. Mining conditions are difficult, with most of the mines situated in the high plateau of the Andes at altitudes of over 12,000 ft. In 1952, the large mining groups of Patino, Hothschild and Aramayo were nationalized and placed under the control of a state agency, the Corporación Minera de Bolivia (COMIBOL), subject to the supervision of the Ministry of Mines.

The nationalized mines produce about 70 per cent of the total output of ores and employ about 65,000 workers. Although the local currency account of the Corporación has shown a loss since its foundation, it is a net earner of foreign exchange (U.S.$42,000,000 in 1955). The "medium" mines (defined as those producing a minimum of 7.5 tonnes of tin monthly or fixed amounts of other minerals) and the "small" mines remain in private ownership; but ore sales for all private mines and imports for equipment for the small mines are handled by another government agency, the Banco Minero de Bolivia (BAMIN).

The usual ports of entry are Mollendo and Matarani in Peru, and Arica and Antofagasta in Chile, all of which are connected by rail to Bolivia. For consignments to the mines in the south of the country, which are the majority, shipment to Antofagasta has the advantage that the railway passes through the import centre of Oruro.

Only local firms registered as importers are permitted to submit bids for Corporación Minera or Banco Minero tenders. There is very little, if any, direct importation from the manufacturers. It is, therefore, essential for any exporter who wishes to participate in this business to appoint a registered importer as an agent. Importers occasionally place orders for some items from merchant houses but there is a preference for the direct representation of manufacturers. To enable the mines to obtain the equipment they need without delay, it is usual for the agent to hold stocks on consignment with the manufacturer receiving payment only when delivery is made to the customer.

There is an overwhelming majority of compressed air hammer drills. These are of all types, i.e. hand-held hammers, stopers and drifters. The world tendency to standardize on the sinker drill with the telescopic support

for horizontal and semi-vertical holes is slowly being felt, but the Bolivian miner is notoriously conservative and there is still a market for stopers and drifters.

It should be noted that even on some of the larger properties a considerable proportion of the drilling is carried out by hand. The smaller mines drill entirely by hand although the increased cost of labour has promoted the tendency to mechanize.

Drill rods, bits, stems, etc., naturally vary with the type of rock being drilled. Although no particular preference is shown regarding the choice of drilling medium, there is a slight tendency for newly mechanized mines to prefer "throw-away" bits because of the limited first cost due to there being no initial equipment such as sharpeners to purchase. When a smaller mine is being mechanized for drilling in hard rock the tendency appears to be favouring the Swedish method of drilling with tungsten carbide tipped drill stems. This tendency may well become more pronounced due to the sales campaign of the representative of an American welding rod manufacturer. This company is giving instruction in rod slotting and tungsten carbide insert brazing, etc., to mine personnel. Since the drills thus made up have given good results both in hand and machine drilling it is likely that the popularity of tungsten carbide tipped stems will be increased as a result.

All types of compressors are in operation, powered in the larger mines by electric or large diesel motors, while in the smaller mines the portable (either wheel or skid mounted) is preferred. This preference is due entirely to the limited funds available for mechanization.

In this respect it is worth nothing that whilst credit payment terms have helped certain small mines to commence mechanization, the heavy finance charges made by the Banco Minero de Bolivia have in the main prevented the wider scope of mechanization on credit terms. It is rumoured that the functions of the Banco Minero de Bolivia are to be curtailed in the coming year and should credit financing be made available directly to small mining companies, it is certain that the market possibilities of small installations, i.e. compressors (capacity of 2-3 hammers) plus the hammers and ancillaries, will be good.

The main mining areas are at altitudes of between 10,000 and 15,000 ft. Due allowance should be made for this when designing units for this market. In connection with compressors, piping made of plastic material is finding an excellent market here and is competing with the more orthodox cast iron and galvanized piping.

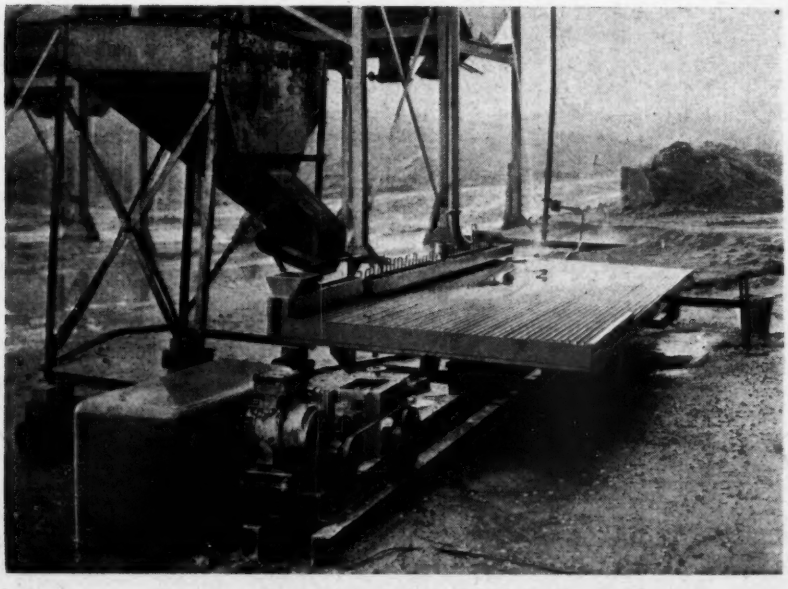
Generally speaking, the use of diamond drills is limited to the large State-owned mines, while at the same time the use of mechanical haulage equipment is limited to the large State-owned mines and the larger medium mines. The latter use battery locomotives (as far as is known all of American manufacture) whilst the former employ both this type and the trolley wire units plus a small number of diesel locomotives (here again it is believed that all these units are of United States origin). Generally speaking, even in the larger mines, the mine cars rarely exceed 2 cu. m. in capacity. All types are employed but cars are largely of United States and German manufacture. Conveyor belting is not normally employed in the mines on underground operations.

Milling equipment is largely limited to the large and medium-sized mines and covers all types. Both jaw and cone crushers are employed. The Denver "Sub A" cell is undoubtedly the most popular.

Both cone and tank de-waterers are employed, cyclones are not widely used, and very few private miners can afford the initial expense of H.M.S. systems. At present the nationalized properties have the only operating units. Diester Overstrom and Wilfley tables are in the great majority, all employing water as the concentrating medium, while filters are used mainly on the larger properties, the smaller properties relying on decantation. Driers are generally ovens fired by llama dung or fuel oil but Lowdon type driers are used on the more mechanized properties. Grizzlies and similar screens are used on properties of all sizes.

The United States is the greatest supplier of all types of machinery, with Sweden and Germany in second place.

There is a substantial market for mining machinery in Bolivia, most of which has been captured by foreign competitors. If British manufacturers are to compete successfully, it is essential that they should be prepared to supply goods on consignment and send technical staff to Bolivia to study conditions and promote sales.



The new Wilfley ore concentrating table assembled on site with protecting cover removed. This unit has been constructed especially for the export market

Technical Briefs

Radioactive Gold in Aircraft Propulsion

At a recent meeting of the American Chemical Society, Dr. Stuart W. Churchill, of the University of Michigan, reported that a small piece of radioactive gold could increase the burning speed of fuel by up to 50 per cent.

The implication of this discovery is that smaller engines might be made to do the work of the larger ones currently in use, thus reducing fuel costs for aircraft and guided missiles, since it would thus be possible to effect a considerable reduction both in the engine weight and in the space required for combustion processes. Since every pound thus saved in a plane could mean savings of several pounds elsewhere, other economies would also be effected besides those in the cost of fuel.

HUNGARIAN TECHNOLOGY ON EARTH MOVEMENT

The object of scientific investigations on rock movements is to obtain numerical data on surface deformations caused by winning. The characteristic values of these are the extent, location and range of the subsidence together with the horizontal movement, the angle of rupture and the critical angle, and the specific variations of length. In his paper *New data on the computation of surface deformations*, F. Martos determines these values by computation.

Even before winning is commenced, the danger threatening the buildings on the surface and the extent to which they are threatened may thus be ascertained.

For computation the author deduces—his deductions being based on the findings of Polish research—the equations of the curves of stress and of subsidence (since the equations of the curve of stress are indispensable in determining the specific inclination), the inflexion and the variations of length. The results obtained by computation and by measurements effected at a specified shaft are rather divergent. Nevertheless the computed values can serve at least as a basis for the solution of the relevant problems.

Further research into the behavious of ground itself has been carried out by L. Szebenzi, who points out that in tectonical investigations it is important that the forms caused by the compaction of rocks should not only be recognized but the degree of compaction should also be determined. In *Compaction of rocks and structure* formation, the author stresses that a method of computation exists for tectonically undisturbed structures. It was necessary to elaborate a method to segregate the tectonical effects from the influence of the compaction of rocks.

The method is based on the observation that in the course of the compaction of friable sediments overlying solid rocks, the dip of the strata does not vary along the lines of identically thick beds, and thus the dips measured on these lines came into being exclusively under tectonical influence. The tectonical dips determined in this way can be subtracted and thus computations on the compaction of rocks can be executed in tectonically disturbed areas as well.

The author demonstrates his method through investigation of the conditions of stratification in the coal deposits of the Petofibanya and Tatabanya coalfields. Practical results from these investigations may be expected in prospecting for coal, bauxite and oil.

ZINC REFINING METHOD

Official sources in the U.S.S.R. have recently reported that a new method for the continuous production of zinc has been developed by Dnepropetrovsk Institute of Chemistry and Technology. The new method does away with the laborious scraping off of the zinc deposited on the cathodes of hundreds of electrolytic baths.

The new device produces zinc in a continuous ribbon which is automatically separated from the drum-shaped cathodes. The speed of zinc extraction per square meter of cathode is 12 to 15 times that of the usual method while all manual operations are eliminated. Plants of this type are now being installed at three enterprises of the zinc industry.

MEASURING DUST FLOW

A new system for measuring the flow of dust in flues and chimneys was demonstrated in the United Kingdom during March.

Although the system, which can be used to provide a continuous record of the amount of dust being carried up the flues or chimneys, is expected to be especially useful in electricity power stations, it will also be of value in other industries where a knowledge of the amount of dust escaping up either flues, or chimneys, could be utilised to increase the efficiency of plant operation.

The operation of the system depends on the use of an automatically-produced electrical discharge to electrically charge the dust in samples of the gases withdrawn from the flues, thereby enabling the dust particles to be collected on the electrically-charged surface of the sampling unit through which the dust particles are subsequently drawn.

NEW PROTECTIVE COATING

A hardened resin type of lacquer, packed in an Aerosol container for use in industry and named "Ruby" is announced by Amber Oils Ltd. When sprayed on metal surfaces Ruby forms a hard corrosion-inhibiting coating, which is red in colour for easy examination and economy of application.

This coating is strongly resistant to scuffing and abrasion, and will not crack in conditions of heat and moisture. Once applied, it will remain intact for a considerable period. It can, however, be removed by readily available solvents, such as paraffin or white spirit. One tin of Ruby will give a minimum coverage of 150 sq. ft.

A product evaluation test has recently been carried out by a major manufacturer of engineering components. Sample pieces of Shim steel were vapour degreased, sprayed with one coat of Ruby and suspended by iron wires in various positions subject to outside atmospheric conditions, inside atmosphere, acid fumes, acid fumes and dampness, mild acid solution, and alkali fumes and water vapour. The firm concluded in their report that Ruby gave protection against fairly severe corrosive conditions for a considerable length of time, and it was described as an efficient rust preventive.

Ruby is presented as a protective coating for machine tool parts, spares, gauges, stores and all metallic parts exposed to corrosion, or consigned for export.

GRAPHITE ANODES FOR CATHODIC PROTECTION

Corrosion annually costs industry millions of pounds in replacement or maintenance of buried or submerged metal structures. Most of this destructive corrosion can be prevented by the use of the impressed method of cathodic protection.

Carbinert graphite anodes are being supplied extensively to cathodic protection engineering organisations by The Morgan Crucible Company Ltd., and are being used in increasing numbers for the protection of metal structures against electrolytic corrosion.

Carbinert anodes are rendered completely impervious by wax or resin impregnation to give the maximum possible working life in all types of soils and waters. Applications for which these anodes have been used include the protection of buried pipelines and similar installations. Carbinert anodes are stocked in sizes ranging from 2½ in. in diameter to 6 in. in diameter, in lengths up to 80 in.

NEW HIGH-TEMPERATURE ALLOY

A new high-strength, high-temperature alloy designed to help push back the so-called heat barrier now being encountered by jet engines in supersonic aircraft has been announced by Westinghouse Electric Corporation. The new material, referred to simply as W545, is an alloy of iron, nickel, chromium, and, in smaller proportions, molybdenum, titanium and boron. It is to be used inside the red-hot interiors of jet engines, and its development was termed by the company as "a significant advancement in the field of gas turbine disc materials." In 1,200 deg. F. under a stress of 75,000 lb. per in. it survived 30 times as long as standard turbine disc materials.

MINING MISCELLANY

Shipments of iron ore down the Great Lakes during the current season reached 3,251,276 gross tons by April 29—1,794,995 tons less than the 5,046,271 tons moved by the same date in 1956.

★

Aconic Mining Corporation is considering the installation of a second 1,000,000-ton capacity plant to produce ore concentrates from its iron sands deposits at Natashquan, Quebec.

★

The first sulphur has been extracted from the recently-discovered deposits near Tarnobrzeg, Rzeszow voivodship, Poland, where the existence of some 95,000,000 tons of pure sulphur has been established.

★

In our issue of April 19, p. 487, the price of iron ore under an Indo-Japanese contract was stated to be 84s. f.o.b. Tokyo per dry ton of ore at 65 per cent Fe. The correct quotation is 84s. f.o.b. Indian port.

★

A Bill which would authorize the State Conservation Department to lease to private mining companies public-owned mineral rights under Great Lakes waters has passed the State Senate of Michigan. It must next pass the State House of Representatives.

★

The Minister of Mines, Colombia, has granted the Richmond Petroleum Co. a licence to explore and exploit nickel deposits in the Department of Cordoba. The same company has been granted a petroleum concession in the Department of Bolivar.

★

The Mannesmann combine, of Germany, having acquired $20,000,000 of the share capital of Algoma, Canada's second largest steelmakers, through its subsidiary, Mannesmann International Corporation of Toronto, is now the largest single shareholder in Algoma.

★

During 1956 Morocco produced 383,115 tonnes of metallurgical manganese and 38,294 of chemical, 120,047 tonnes lead ore, 70,921 tonnes zinc ore, 6,438 tonnes cobalt ore, 2,863 tonnes copper ore and 29,549 tonnes barytes.

★

Four surveying teams operating on behalf of a Canadian mining company are carrying out prospecting work for copper deposits in various parts of West Cork. The old mines at Ballycumisk, near Ballydehob, have been visited and samples have been removed for analysis.

★

Priority Drilling Ltd., which has been undertaking prospecting surveys for copper and other minerals in the Fintown area of County Donegal is to begin test boring in new districts near Glenties. Old copper, lead, zinc and other workings exist in these areas, but most of them went out of production more than a century ago.

★

A company is to be formed in Pamplona, Spain, for the purpose of mining potash deposits in Navarre. The National Institute of Industry (I.N.I.) and several well-known firms are to participate in the floating of the company, the proposed registered capital of which will be 750,000,000 pesetas.

★

A thorough investigation of the uranium deposits in the valleys of the Obere Kinzig in the Northern Black Forest, Germany, has shown them to be uneconomic in present circumstances. Uranium obtained from them would cost five to six times the present world market prices; they could only be of interest if, at some future date, rising demand were to outstrip supplies from elsewhere.

One of two 3,000 h.p. Metropolitan-Vickers electric winder equipments supplied to Vaal Reefs Exploration and Mining Co. Ltd. through Anglo American Corporation of South Africa Ltd. Each winder is gear-driven by twin a.c. induction motors, which are equipped with dynamic braking. The Metro-Vickers Co. has supplied thirteen a.c. winder equipments of this size to Anglo American in recent years

A preliminary inspection of old copper mine shafts at Berehaven, County Cork, is to be undertaken by the Emerald Isle Mining Co., Ltd., a subsidiary of Can-Erin Mines Ltd., of Toronto. The parent company, according to Canadian sources quoted in Dublin, is to spend $125,000 on this work, which has been recommended by the company's geologist, Mr. J. D. McCannell, following an examination of the mineral deposits at this mine.

★

The Japanese steel industry's committee on overseas raw materials of steel has sent a team of five men to Formosa to study the possibility of developing coal mines in northern Formosa. The objective is to secure coking coal for Japanese steel mills. The committee has announced that a project for developing coal mines in co-operation with Formosa with the aid of funds from the U.S. International Co-operation Administration is contemplated.

★

Sir Harry Moxham, chairman of Rye Park Scheelite NL., stated at the company's annual meeting that the middle area of the Laurietown lease had been shown to contain more than the 25,000 tons of rutile that initial testborings had disclosed. A few test holes had been sunk below the level of the first borings, disclosing heavy mineral concentration at depth. The south area of the lease had proved about 20,000 tons of rutile, while an additional area with proved ore of about 4,000 tons had been acquired.

★

Production is expected to begin this year or early in 1958 at "King Solomon's" copper mines at Timna, near the Israeli Red Sea port of Eilat. Work on the refining installations is now in the last stage. The copper ore will be mined by the open-cast method and will be turned into cement copper of 80 per cent copper content, which will be sent abroad for electrolytic refining. Total output is expected to amount to 7,000 tons of copper annually. Proved reserves of ore are placed at 7,000,000 tons and probable reserves at 25,000,000 tons.

★

Anthracite mine-drainage project No. 9—designed to save several million tons of valuable "hard coal" near Lansford, Pa., from flooding—has been approved by the U.S. Assistant Secretary of the Interior. The project is the latest submitted by the Commonwealth of Pennsylvania under a $17,000,000 State-Federal Co-operative programme for relieving the mine-water problem in the anthracite region. Expected to cost about $75,000, the project calls for improving and adding to the present surface drainage system at the Lansford mine of the Panther Valley Coal Co., in the Southern anthracite field.

★

Industry's bill for corrosion losses—to take metallic corrosion in the U.K. alone—amounts to more than £600,000,000 annually. A special effort is to be made to cut down these losses. October 14-19

of this year will be "National Anti-Corrosion Week". There will be a two-day Corrosion Convention, to be held at Central Hall, Westminster, on October 15 and 16. Nearby, at the Royal Horticultural Society's Old Hall, there will be a three-day Corrosion Exhibition. Application forms for registration for the Convention may be obtained from the Organizer, Corrosion Convention, Stratford House, 9 Eden Street, London, N.W.1.

★

Negotiations are in progress to associate various foreign groups in the development of one of the Sahara's richest mineral deposits. An Italian steel holding group, Finseder, has bought a 15 per cent interest in the Miferma group (Société des Mines de Fer de Mauretainie), which has the concession to exploit a deposit of high-grade iron ore at Fort Gouraud in French West Africa. The reserves are estimated at 100,000,000 tons. British Iron and Steel Corporation (Ore) holds a 15 per cent interest in Miferma. Other participants include Sidérugie Française, Rothschild, Minière de Conakry, and Bureau Minière de la F.O.M. A Canadian company, the Frobisher group, is selling its 34 per cent interest.

★

The Minister for Industries, Mr. M. M. Shah, has stated that, if sufficient reserves of copper were available, the Indian Government might consider setting up a plant with a capacity of 10,000 tons per annum. He said that, from available information, the most promising site appeared to be the Khetri deposits in Rajasthan. There was a very wide gap to be filled in between demand and supply of copper and the Government had taken up the work of systematic examination of some areas. Mr. Shah, who was inaugurating the annual meeting of the Indian Non-Ferrous Metal Manufacturers' Association, ruled out for the present any stockpiling of non-ferrous metals and ores in view of foreign exchange difficulties.

★

Surveying for the proposed £18,000,000 hydro-electric scheme to be built on the upper reaches of the Malibamatso River in Basutoland is in progress. The project is one of three dam schemes presently being investigated by the British Government. The cost of damming the river is estimated at some £9,000,000, while a further £9,000,000 will be required for the hydro-electric project which will be capable of developing 350,000,000 kW hours a year. The second project is the Ox Bow Lake scheme which involves the building of a dam 400 ft. high on the Caledon River. An investigation of this scheme is expected to cost in the region of £26,000 and will be completed early in 1958. The third scheme is the Semena River project from the Orange and Semena Rivers to the Leribe or Teyateyaeneng areas. The estimated cost is between £45,000,000 and £50,000,000.

★

The mining committee of the Legislature, on which all parties have representation, has given almost complete approval to a Bill amending the Ontario Mining Act. The Bill gives the holders of patented mining claims only such surface rights as are required for efficient prospecting, exploration, development and mine operation. Until patent, the claim holder has only the right to use such surface rights as are required for mining purposes. The Minister of Mines is empowered to reserve from patent or lease of a mining claim all such surface rights as are not required for actual mining purposes. Control of surface rights in the patent will not apply to claims for which application has been made before September 1, 1957. The present Bill is designed merely to "hold the line" until an independent committee can consolidate the entire Mining Act.

CONFERENCES AND EXHIBITIONS

The 1957 Engineering Exhibition will be held at Brno, Czechoslovakia, from September 1 to 22.

★

A Workmen's Safety and Factory Hygiene Congress and Exhibition will be held in Düsseldorf from October 17-19, 1957.

★

The International Congress and Exhibition of Measuring Instrumentation and Automation INTERKAMA 1957 will be held in Düsseldorf from November 2-10.

★

The annual meeting of the British Association for the Advancement of Science will be held in Dublin from September 4 to September 11, 1957.

★

An additional general meeting of the Institution of Mining and Metallurgy will be held on June 20, 1957, at the Geological Society of London, Piccadilly, London, W.1.

★

Altogether 33 papers from 11 different countries have been accepted for the International Mineral Dressing Congress to be held in Stockholm, September 18-21, 1957.

★

The Canadian National Material Handling Show, sponsored by the Montreal Chapter of The American Material Handling Society, will be held from September 30 to October 4, 1957, in Montreal.

★

The 1957 Leipzig Spring Fair took place from March 3-14, 1957. Some 9,355 exhibitors from 41 countries exhibited in 39 buildings. A total of 662,000 visitors from 78 countries visited the fair.

The Second Symposium on Coal Preparation under the sponsorship of the Coal Preparation Plant Association and the University of Leeds will be held at the University from October 21 to 25, 1957.

★

Canada's Power Show, sponsored by the Canadian Institute of Power Engineers, will be held in 1957 from October 21 to 24, 1957, in the New Queen Elizabeth Building, Exhibition Park, Toronto, Ontario.

★

So great has been the advance interest shown in the first Instruments, Electronics and Automation Exhibition, to be held at Olympia, London, in May this year, that it has already been agreed to stage the show again next year. The dates will be April 16-25, 1958, and the location will again be Olympia.

★

The Iron and Steel Engineers Group is holding two meetings in the autumn of this year. The first, on Air Pollution in the Iron and Steel Industry, will take place on September 25 and 26 at Church House, Westminster, London, and the second, on Water Pollution in the Iron and Steel Industry, on December 11 and 12, 1957, at the same venue.

CONTRACTS AND TENDERS

Metropolitan - Vickers has recently received an order from the National Coal Board for two four-rope tower-mounted friction winders for Bevercotes Colliery (East Midlands Division). This order, which is worth about £170,000, brings the total number of friction winders ordered from M-V since the war up to 17.

★

An International Co-operation Administration (I.C.A.) procurement for Spain calls for stone-crushing and separating machinery, mechanical handling plant, and two portable diesel motocompressor sets. Bids should be sent to the Issuing Authority, Ayuda Económica de la R.E.N.F.E., San Cosme, 1, 2nd Floor, Madrid. Closing date, 20/5/57. Procurement Authorization No. 52-33-117-6-60037. Dollar value $255,300. B.O.T. Ref.: E.S.B./11436/57/I.C.A. Telephone enquiries to Chancery 4411, Extension 360.

Included in the 5,000 tons of British exports which the Canadian Pacific 25,500-ton liner "Empress of England" carries on her maiden voyage to Montreal, is a large double helical gear, cast and cut by the Jackson Division, Salford, of David Brown Industries Ltd., together with the mating pinion. The gear set is one of four ordered through David Brown (Canada) Ltd., of Toronto, by a Quebec customer for driving ball mill coal pulverizers. The wheel is seen being lifted from the deck of a floating crane at Liverpool for loading into the hold of the liner

Metals and Minerals

Growing Importance of the Rare Earth Metals

Both in Britain and the U.S. there is growing interest in thorium and the rare earths, both commercially and in the nuclear field. In the U.K. a concentrated programme of research into the application of thorium and of alloys in future nuclear power stations is being undertaken by the British Non-Ferrous Metals Research Association in collaboration with the U.K. Atomic Energy Authority. Research on thorium and the rare earths is also being done by Thorium Ltd.

Much information has recently been released regarding recent work in the U.S., where the increasing demand for thorium materials for commercial power reactors has resulted in a growing stockpile of surplus rare earths. The rare earths—the term given collectively to a group of metals comprising the lanthanons and yttrium—and thorium are produced from the same ore—monazite. In monazite the ratio of rare earths is about 10 to 1, so that for every pound of thorium produced, approximately 10 lb. of rare earths are recovered.

The largest producer of rare earth and thorium materials in the U.S. is the Lindsay Chemical Co., of West Chicago, which has been processing these materials since the first world war. According to Dr. Howard E. Kremer, technical assistant to the president, Lindsay Chemical Co., applications of the rare earth which are currently important include the use of the oxide and the fluoride in the cores of carbons used for motion picture projection and for military searchlights and studio lighting. Another important use is in the form of misch metal, an alloy of the mixed rare earths consisting largely of cerium and other rare earths in the proportions in which they are found in the monazite ore. The greatest use of misch metal to-day is in magnesium-zirconium-rare earth alloys, which are used for high temperature service in jet engines. Rare earths have long been used in the glass industry, both in colourizing and in decolourizing glass.

Although Lindsay has constantly been stressing the potential value of its cruder, more inexpensive rare earth mixtures, it has also been concentrating on the lesser known materials, which will undoubtedly have extensive application in the nuclear industry. Gadolinium, samarium and europium salts are being looked at intensively by several companies setting up commercial atomic power plants. The interest in these materials is due to the fact that they have the highest neutron absorbing capabilities of any of the elements. Their thermal neutron cross sections are higher than those of the conventionally-used elements — boron, cadmium and hafnium.

The annual report of the Molybdenum Corporation of America also places considerable emphasis on the rare earths. It refers to material progress in their use, not only in the steel industry but also in other fields, both metallurgical and chemical. The company has been investigating methods for the separation of the rare earths into component metals for the purpose of producing and selling the separated metals and their compounds.

Another U.S. firm, St. Eloi Corporation, has begun commercial production and shipment of high-purity rare earth metals, which, according to the company, are expected to inaugurate a new era in the development of alloys. It is already known that the alloying of pure individual rare earth metals to steel, aluminium and other metals produces dramatic results in hardness, high-temperature strength, and colour. St. Eloi Corporation, in its own experiments, has produced an aluminium alloy of a vivid purple colour, which permeates the metal itself, making the purple "finish" completely scratch-proof.

A reactor experiment now in progress at Lynchburg, Va., is described as a vital step in the development of the power reactor which Babcock and Wilcox is building for Consolidated Edison Co. at Indian Point, N.Y. It represents the first use in the U.S. of large quantities of thorium in connection with a nuclear power plant project.

The very large amount of research being carried on both in the U.S. and in Europe will undoubtedly result in the creation of new and materially expanded markets, states the report of the Molybdenum Corporation.

It is the consensus of U.S. specialists that rare earth technology to-day parallels that of titanium in 1940. Producers, users and potential users feel that the high prices of some of the rare earths, due to small production, has kept consumption down. Now, with improved processing techniques and large production facilities, rare earths are expected to decrease gradually in price.

LITHIUM AGREEMENT

The American Metal Co. and Montgary Exploration have agreed on a plan for an option until November 1, 1957, that will give American Metal a 60 per cent interest in Montgary's lithium property at Bernic Lake, Manitoba. American Metal would advance $1,800,000 to a jointly-owned company and both companies have agreed to provide a further $2,000,000, on the basis of 60 per cent American Metal and 40 per cent Montgary, if needed, to bring the property into production.

In his annual report Mr. Herbert W. Rogers, president of the Lithium Corporation, states that lithium has emerged as an important ingredient in the production of high energy chemical fuels. The company has already received major orders from organisations engaged in the production of these fuels. Research by Lithium Corporation and other concerns has found a number of new applications for lithium and its compounds in widely divergent fields. For example, lithium products have found applications in porcelain enamels for aluminium and in self-fluxing brazing alloys. Company-sponsored research at the Armour Research Foundation has resulted in the development of a lithium-bearing, self-fluxing alloy for the brazing of stainless steel. Two patents based on this work have been issued.

JAPAN'S TITANIUM INDUSTRY

The Japan Titanium Manufacturers Association have announced a production target for the current financial year (from April 1) of 4,382 tons, in view of increased exports. Output of titanium sponge during the past financial year totalled 2,991 tons, while exports amounted to 3,011 tons of which 2,874 tons went to the U.S. These figures compare with 1,249 tons and 1,114 tons respectively in the calendar year 1956.

The three suppliers of titanium sponge in Japan are expected to produce the metal at a rate of 520 tons monthly after December, 1957, compared with the present 300 tons. Osaka Titanium Co. plans to increase its capacity to 200 tons monthly from the present 120 tons; Toho Titanium Co. to 250 tons monthly from 160 tons; and the Nippon Soda Co. to 70 tons monthly from 20 tons. The funds required for these expansion programmes are estimated at about 3,500,000,000 Yen, to be raised from the Development Bank of Japan and private funds of each company.

U.S. ALUMINIUM STOCKPILING

The U.S. Office of Defence Mobilisation has announced that calls for delivery of aluminium to the stockpile of strategic materials will not be made in the second half of the current year. O.D.M. officials stated that the Federal Government was not exercising its "call" rights under the Defence Production Act contracts because the minimum stockpile objective for the metal had been reached, and there was no urgency for meeting the long-term stockpile goal.

★

It has been announced that Swiss Aluminium-Industries-AG (AIAG), of Chippis, is now producing super-purity—99.999 per cent—aluminium under the name of "Super Raffinal". Previously the purest material turned out by the company was 99.99 per cent. AIAG has also developed a method of extracting gallium of very high purity at lower cost during the alumina manufacturing process.

MAGNESIUM'S CONTINUED PROGRESS

U.S. shipments of magnesium castings in 1956 amounted to 18,084 s.tons as against the 1955 total of 13,944 tons—a gain of 30 per cent. U.S. domestic production of primary magnesium continues to set new peacetime records. For the first quarter of 1957 it totalled 20,685

tons against 18,593 tons for the comparable quarter of last year. Production for the past six months has exceeded 41,000 tons, indicating a near capacity rate of operation. The Magnesium Association reports that demand is holding up well.

Production and sales of the Canadian producer, Dominion Magnesium Ltd., reached new peaks during 1956. A large proportion of the metal exported was used for reduction of other metals, where the high purity of Domal magnesium is claimed to be an important factor. An agreement was made last year with Brooks and Perkins Inc., of Detroit, to construct jointly a plant at Selma, Alabama, for the production of magnesium by Dominion's process. It is anticipated that construction will start during the current year.

HIGHER QUICKSILVER PRICE

The price of quicksilver on the spot in London was raised this week from £86 to £88 a flask, ex-warehouse. The £86 price had been held since March 26. Supplies of physical metal are reported to be short and prospects of any worthwhile relief in the near future are not regarded as bright, because of the still fairly well sold position of the Spanish and Italian producers. In this connection it is believed that producers might even extend their commitments, since demand generally is still good. Japan is reportedly still requiring supplies.

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The U.S. Office of Defence Mobilization has closed the defence expansion goal for quicksilver.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

Movements of prices on the London Metal Exchange during last week continued in the same pattern as during the previous week with zinc and lead prices falling and copper and tin prices being maintained.

R.S.T.—RHOANGLO SELLING AGREEMENT AWAITED

The main item of news in the copper world has been the report that the two Rhodesian copper companies are on the point of reaching an agreement on a common method of selling their metal and that an announcement can be expected within a few weeks—after the blessing of the main British consumers has been obtained. Some quarters appear to consider that this means a so-called "fixed price" policy similar to that at present adopted by the R.S.T. but it should be borne in mind that if this is indeed the case then the consumers' agreement cannot be regarded as a foregone conclusion.

It is worth noting that whereas at its inception the R.S.T. price was quoted firm for a month, it was not long before it became subject to 24 hours' notice so that in fact it has become a price which has altered almost without notice and by large steps, thus perpetuating some of the worst features of government trading.

Another conclusion which seems to have been jumped to is that any agreement will lessen activity of the copper market on the L.M.E. but in this case it can be argued that activity is likely to be increased at all times when the producers' price and the L.M.E. price show any great variation, as those consumers who have contracts with the Rhodesian producers will doubtless engage in "arbitrage" operations.

COPPER STEADY

The market itself during the week has been active but with very little variation either in price or in contango, and stocks on Monday showed a further increase of 250 tons to a total of 4,547 tons.

From the issued reports of the companies, it is interesting to note the following productions from three of the Rhodesian mines for the nine months ended March 31, 1957: Roan Antelope, 59,178 l.tons; Mufulira, 67,560 l.tons; Chibuluma, 13,605 l.tons.

In America the picture remains unchanged, with no increase in the off-take of the red metal, but it appears from reports received and talks with Americans visiting this country that the general atmosphere as far as copper is concerned is considerably better, and although nothing startling is expected before the summer holidays, most experts are prepared to predict an upturn in consumption during the last four months of the year.

Prices during the week have been slightly easier with custom smelters selling at 30¼ c. per lb. and export copper being traded at 30 c. per lb.; these movements were matched by a small reduction in the smelters' intake price of scrap to 24¼ c.

ZINC DOWN TO 12 C.

The zinc market has been the highlight of the week, as there was a great deal of selling prior to the actual reduction in the American quotation and when this took place further sales were pressed on the market and the price has continued to recede. The drop was more severe than might otherwise have been the case if the market had not suffered from a large backwardation for some time, as this had limited the number of dealers who were prepared to go short so that when the fall came there was no covering back of such sales. With the fall in price in America to 12 c. and the fall here, some increased consumer demand has been noted both in Europe and America but at the moment it appears that this is not likely to be long-lived as confidence in the price level has not been established.

Further developments will undoubtedly depend upon the various pronouncements which will be made on the future of the various stockpiling policies and if the last few days are any criterion these are likely to be many and varied. The facts seem to be that the monthly intake in the stockpile from domestic producers is likely to continue at a reduced scale and simultaneously some kind of negotiations will take place to find out the best method of supporting the U.S. domestic zinc mining industry, when the merits of tariffs versus import quotas will have to be thought out. (This issue is further discussed on page 581.)

Whether the barter programme will continue at anything like its previous volume is a matter of much uncertainty as the picture is complicated by the fact that other countries which export agricultural produce are complaining about the U.S. disposal programme, and at the same time there is a definite move in Washington for making drastic revisions in the amounts allocated to the various stockpile programmes so that it may be many months before there is any real clarification of this problem. In March the barter programme covered $2,100,000 worth of zinc.

LEAD PRICE FOLLOWS ZINC

The lead market has been affected by the collapse in the zinc price but at the time of writing there is still no news that the American quotation has been reduced, but a number of prominent men on the other side of the Atlantic are already saying that historically lead and zinc prices move together and that there is nothing to make one think that this will not be the case on this occasion.

It is true that the statistical position of lead is far better than that of zinc and, in Europe at least, there is no unsold tonnage overhanging the market. Barter deals have, however, been absorbing fair tonnages of the metal during the last few months and figures show that $4,400,000 worth of lead were the subject of barter deals during March.

It is generally felt in London that any decrease in the lead price will be far less than that in the zinc price and that even if barter deals are suspended or carry on at a much-reduced volume, the world position of lead is such that after a short period of readjustment, price levels—if they were to fall—would regain those existing to-day. During March the O.E.E.C. countries produced 50,028 tonnes as opposed to 48,042 in February.

SMALL BACKWARDATION IN TIN

Although stocks of tin in official warehouses increased last week by 509 tons to a total of 1,236 tons, the contango was not maintained and a small "back" reappeared, but it is not expected that this will be maintained very much longer. Nevertheless, should reports that the Buffer Stock Manager has been operating prove to be correct, there will come a time within three months when stocks will commence being transferred from the market to the pool and this may tend to delay the establishment of a sizeable contango.

It is understood that Russian tin is still coming to this country and that some of it is now in warehouse but as this tin is not deliverable against the Metal Exchange contract it does not appear as part of the official stocks.

The Straits Trading Co. give the shipments of tin from Malaya for April at 2,094 l.tons from Singapore and 4,333 from Penang. These figures are an overall drop of about 1,250 tons from the previous month's shipments.

On Thursday morning the Eastern price was equivalent to £785 per ton c.i.f. Europe.

Closing prices and turnovers are given in the table overleaf.

LONDON METAL AND ORE PRICES, MAY 9, 1957

THE WEEK ON THE L.M.E

	May 2 Buyers	May 2 Sellers	May 9 Buyers	May 9 Sellers
Copper				
Cash	£240½	£240½	£238½	£239
Three months	£240½	£241	£237½	£238
Settlement	£240½		£239	
Week's turnover	7,225 tons		7,000 tons	
Lead				
Current ½ month	£108½	£109	£95½	£96
Three months	£108½	£109	£96	£96½
Week's turnover	3,550 tons		6,875 tons	
Tin				
Cash	£772½	£773	£761½	£762
Three months	£770½	£771	£760½	£761
Settlement	£773		£762	
Week's turnover	830 tons		915 tons	
Zinc				
Current ½ month	£93½	£94	£84½	£84½
Three months	£90	£90½	£80½	£80½
Week's turnover	9,225 tons		11,550 tons	

METAL PRICES

Aluminium, 99.5%, £197 per ton

Antimony —
English (99%) delivered, 10 cwt. and over £210 per ton
Crude (70%) £200 per ton
Ore (60%) bases 23s. 6d./24s. 6d. nom. per unit, c.i.f.

Arsenic, £400 per ton

Bismuth (min. 1 ton lots) 16s. lb. nom.

Cadmium 12s. 0d. lb.

Cerium (99% nett), £13 18s. lb delivered U.K.

Chromium, 7s. 2d. lb.

Cobalt, 16s.-19s. lb.

ORES AND OXIDES

Bismuth .. .. 30% 5s. 0d. lb. c.i.f. 20% 3s. 3d. lb. c.i.f.

Chrome Ore—
Rhodesian Metallurgical (semifriable) 48% .. .. £17 8s. 0d. per ton c.i.f.
" Hard Lumpy (45%) .. .. £17 8s. 0d. per ton c.i.f.
" Refractory 40% .. .. £12 15s. 0d. per ton c.i.f.
" Smalls 42% .. .. £16 5s. 0d. per ton c.i.f.
Baluchistan .. .. £18 15s. 0d. per ton c.i.f.

Columbite, 65% combined oxides, high grade .. .. 185s./197s. 6d. per unit

Fluorspar—
Acid Grade, Flotated Material .. .. £22 13s. 3d. per ton ex. works
Metallurgical (75/80% $Ca F_2$) .. .. 156s. 0d. ex. works

Lithium Ore—
Petalite min. 3½% Li_2O .. .. £8-£10 per ton f.o.b. Beira
Lepidolite min. 3½% Li_2O .. .. £8-£10 per ton f.o.b. Beira
Amblygonite basis 7% Li_2O .. .. £28-£32 per ton f.o.b. Beira

Magnesite, ground calcined .. .. £28 0s./£30 0s. d/d
Magnesite Raw (ground) .. .. £21 0s./£22 0s. d/d
Molybdenite (85% basis) .. .. 8s. 5d. nom. per lb. (f.o.b.)

Titanium Ore —
Rutile 95/97% TiO_2 .. .. £61/£63 per ton c.i.f. Aust'n
Ilmenite 52/54% TiO_2 .. .. £11 10s. per ton c.i.f. Malayan

Wolfram and Scheelite (65%) .. .. 155s./162s. 6d. per unit c.i.f.

Manganese Ore Indian
Europe (46%-48%) basis 140s. freight plus 17½% surcharge .. .. .. 139d, nom. per unit c.i.f.
Manganese Ore (43%-45%) .. .. 110d. nom. per unit. c.i.f.
Manganese Ore (38%-40%) .. .. 104 . nom. per unit. (including duty)

Vanadium —
Fused oxide 90-95% V_2O_5) .. .. £12½-£13½ per unit c.i.f.
Zircon Sand (Australian) (65-66% ZrO_2) .. .. £20 per ton c.i.f.

Germanium, 99.99%, Ge. kilo lots 3s. 4d. per gram

Gold, 250s. 4d.

Iridium, £27/29 oz. nom.

Lanthanum (98/99%) 15s. per gram

Manganese Metal (96%-98%) £310

Magnesium, 2s. 5½d. lb.

Nickel, 99.5% (home trade) £600 per ton

Osmium, £20/22 oz. nom.

Osmiridium, nom.

Palladium, £8 0s./£8 10s. oz.

Platinum U.K. and Empire Refined £33/£33½ oz.
Imported £33/£33½ nom.

Quicksilver, £88 ex-warehouse

Rhodium, £42 oz.

Ruthenium, £15/£17 oz. nom.

Selenium, 85s. nom. per lb.

Silver, 79¼d. f. oz. spot and 79½d. f'd.

Tellurium, 15s./16s. lb.

LONDON STOCK EXCHANGE PRICES, MAY 8, 1957

Finance	Price May 8	+ or — on week
African & European	51/10½	—3/1½
Anglo American Corpn.	5½	—1/16
Anglo-French	22/-	—6d
Anglo-Transvaal Cons.	26/3	.....
Central Mining (£1 shrs)	67/3	+3/6
Consolidated G'fields	55/6	—1/3
Consol. Mines Selection	28/3	—9d
East Rand Consols	1/7½	+3d
General Mining	53/9	—1/3
H. E. Prop.	8/-	—4½d
Johnnies	38/6	—1/-
Rand Mines	71/3	+3/9
Rand Selection	33/9	—7½d
Union Corporation	34/3	—1/3
Vereeniging Estates	4½	—¼
Writs	34/9	—9d
West Wits.	30/-	—6d
Rand Gold		
Blyvoors	18/6	—10½d
Brakpan	4/9	—3d
Buffelsfontein	30/7½	—6d
City Deep	11/6	—6d
Consol. Main Reef	11/7½	—3d
Crown	22/6	—1/6
Daggas	28/1½	—7½d
Dominion Reefs	16/6	—6d
Doornfontein	19/9	—3d
Durban Deep	20/-	—6d
E. Champs	2/9	.....
E. Daggas	6/10½	—6d
E. Geduld (4s. units)	25/9	—3d
E. Rand Props.	38/6	—1/6
Geduld	68/9	.....
Govt. Areas	3/9	—3d
Grootvlei	14/7½	—6d
Hartebeestfontein	46/4½	—1/-
Libanon	6/3	+1½d
Luipaards Vlei	12/4½	+9d
Marievale	16/4½	+3d
New Kleinfontein	3/4½	—1½d
New Pioneer	18/-	—3d
Randfontein	28/3	—1/3
Robinson Deep	6/10½	+4½d
Rose Deep	8/6	—4½d
Simmer & Jack	3/9	.....
S.A. Lands	22/6	—3d
Springs	1/10½	—1½d
Stilfontein	25/3	—4½d
Sub Nigel	15/-	—6d
Vaal Reefs	29/10½	—9d
Van Dyk	2/10½	+1½d
Venterspost	12/-	—3d
Viakfontein	13/9	—6d
Vogelstruisbult	12/4½	+1½d
West Driefontein	4 3/16	—1/16

Rand Gold contd.	Price May 8	+ or — on week
W. Rand Consolidated	29/3	—9d
Western Reefs	26/10½	—1/3
O.F.S. Gold		
Freddies	4/6	.....
Freddies Consolidated	2/6	.....
F.S. Geduld	58/9	—3/9
Geoffries	2/7½	—1½d
Harmony	18/3	—1/-
Loraine	3/9	—3d
Lydenburg Estates	10/3	—1/-
Merriespruit	3/6	.....
Middle Wits	7/6	.....
Ofsits	45/9	—2/3
President Brand	45/9	—3/-
President Steyn	24/6	—1/10½
St. Helena	21/10½	—1/6
Virginia Ord.	9/9	.....
Welkom	12/6	—1/3
Western Holdings	58/9	—3/9
West African Gold		
Amalgamated Banket	1/1½	.....
Ariston	4/1½	+1½d
Ashanti	19/-	+9d
Bibiani	2/7½	+1½d
Bremang	1/5½	+½d
Ghana M.R.	1/7½	.....
Konongo	1/6	—1½d
Marlu	½d	.....
Taquah	1/1½	.....
Western Selection	5/6	+6d
Australian Gold		
Gold Mines of Kalgoorlie	12/6	—3d
Great Boulder Prop.	12/3	.....
Lake View & Star	19/3	+6d
Mount Morgan	13/-	—1/3
North Kalgurli	7/6	.....
Sons of Gwalia	1/9	.....
Western Mining	9/3	—3d
Miscellaneous Gold		
Cam & Motor	7/9	.....
Champion Reef	6d	.....
Falcon Mines	7/9	.....
Globe & Phoenix	24/6	.....
Motapa	10½d	.....
Mysore	3d	.....
Nundydroog	6d	.....
St. John d'el Rey	53/9	—5/-
Zams	55/7½	+7½d

Diamonds and Platinum	Price May 8	+ or — on week
Anglo American Inv.	8½	.....
Casts.	29/-	+1/-
Cons. Diam. Pref. of S.W.A.	10/9	.....
De Beers Defd. Regd.	4½	+¼
De Beers Pfd. Regd.	13½	.....
Pots. Platinum	15/3	—4½d
Waterval	26/-	—3d
Copper		
Bancroft	40/7½	—1½d
Chartered	77/3	—1/3
Esperanza	2/4½	.....
Magundi	8/9	—3d
Messina	7 11/16	—1/16
Nchanga	12½	—1/16
Rhod. Anglo-American	99/-	.....
Rhod. Katanga	36/9	—1/3
Rhodesian Selection	22/1½	—7½d
Rhokana	40	—¼
Rio Tinto	4½	+1/16
Roan Antelope	12/-	—1/4½
Selection Trust	4 15/16	—1/16
Tanks	8 1/16	—¼
Tharsis Sulphur Rr.	4½	.....
Tin (Eastern)		
Ayer Hitam	25/6	.....
Gopeng	17/3	+6d
Hongkong	7/4½	.....
Ipoh	17/3	.....
Kamunting	12/-	—1½d
Kepong Dredging	5/10½	+1½d
Kinta Tin Mines	27/1½	+10½d
Malayan Dredging	17/7½	+1/-
Pahang	16/4½	+1/3
Pengkalen	19/3	+6d
Petaling	6/6	.....
Rambutan	20/-	.....
Siamese Tin	15/7½	+4½d
Southern Kinta	22/4½	+1/3
S. Malayan	11/10½	—1½d
S. Tronoh	8/7½	.....
Sungei Kinta	22/3	.....
Tekka Taiping	9/6	.....
Tronoh	14/-	+3d
Tin (Nigerian and Miscellaneous)		
Amalgamated Tin	10/-	—1½d
Beralt Tin	49/6	+1/-
Bisichi	4/9	+3d
British Tin Inv.	26/-	+3d
Ex-Lands Nigeria	2/6	+1½d
Geevor Tin	19/9	—10½d

Tin (Nigerian and Miscellaneous) contd.	Price May 8	+ or — on week
Gold & Base Metal	1/3	.....
Jantar Nigeria	3/9	.....
Jos Tin Area	15/3	.....
Kaduna Prospectors	2/-	.....
Kaduna Syndicate	2/3	.....
London Tin	12/4½	—6d
United Tin	10½d	.....
Silver, Lead, Zinc		
Broken Hill South	73/9	—1/3
Burma Mines	3/9	+3d
Consol. Zinc	74/-	—7/9
Lake George	8/10½	+1½d
Mount Isa	27/9	—1/6
New Broken Hill	52/6	—3/9
North Broken Hill	5½	—1/16
Rhodesian Broken Hill	11/9	—4½d
San Francisco Mines	24/6	—2/-
Uruwira	3/3	—3d
Miscellaneous		
Base Metals and Coal		
Amal. Collieries of S.A.	2 11/16	—1/16
Associated Manganese	38/-	—1/3
Cape Asbestos	12/3	+1/4½
C.P. Manganese	28/6	—3d
Consol. Murchison	49/4½	.....
Natal Navigation	3½	—1/16
Turner & Newall	138/6	+4/6
Wankie	17/9	—6d
Witbank Colliery	5½	+½
Canadian Mines		
Dome	$25½	.....
Hollinger	$62	+2½
Hudson Bay Mining	$145	.....
International Nickel	$214	—5
Mining Corpn. of Canada	£7	—½
Noranda	$106	.....
Quemont	£5½	—½
Yukon	4/9	.....
Oil		
Apex	50/6	+6d
Attock	46/-	+1/-
British Petroleum	146/9	—3d
Burmah	108/9	+7½d
Canadian Eagle	77/9	+1/-
Mexican Eagle	21/6	—1½d
Shell	182/-	+3/3
T.P.D.	75/7½	+7½d
Ultramar	76/-	+7½d

Mining Finance

Disappointments from Consolidated Zinc

At one time earlier in the year it was thought that any budget concessions for Overseas Trading Corporations would be of considerable benefit to Consolidated Zinc, the U.K.-controlled company producing lead and zinc in Australia. Buying of the shares on this theory took the price at one time up to a high point of 92s. 6d. More mature consideration of what the company's position might be in this context saw the shares come back appreciably and this reaction has proved justified with an announcement from the company itself that, from their examination of the Finance Bill, the directors do not consider it likely that any material benefits will accrue from the O.T.C. concessions. Consolidated Zinc has, of course, a wide range of interests outside its lead-zinc mining.

This view came as a disappointment enough for the share market where the price was knocked down further to 74s. But, in addition, the preliminary results have also been under expectations. There had been some hope that an increase in the final dividend might be possible. In the event, the final is being repeated at 3s. per £1 share making a total of 4s. 6d. as in 1955. Trading profit certainly improved—from £7,360,000 to £7,430,000—but more has been allowed for depreciation, mining, royalty and taxation, the net balance being thus reduced to just over £2,000,000 against the £2,340,000 obtained in the previous year. The dividend is still amply covered and could very well be maintained to give a yield of 6¼ per cent at the present price even should earnings suffer during the current year by reason of lower metal prices or higher costs. Consolidated Zinc has plenty of projects in hand to make its growth prospects not unattractive, but this is essentially long-term. This week's news will have rather dimmed the immediate investment status of the shares.

The sister company, New Broken Hill, which is a straightforward lead-zinc operation in New South Wales, has had a more optimistic tale to tell. Net profits after a higher tax charge were lower last year at £875,000, against £947,000 in 1955, but the year's dividend has been raised to 5s. per 5s. share against the 4s. 6d. paid in 1955. Moreover, the directors are of the opinion in the light of the Finance Bill that the company will qualify as an Overseas Trading Corporation and presumably useful tax savings will be enjoyed during the current year. New Broken Hill shares this week have weakened to 52s. 6d. This goes against a high point of 58s. around the time of the budget.

UNION CORPORATION GROUP

The South African gold mines operating in the Union Corporation group have also been holding their annual meetings. Important news has come from St. Helena, the O.F.S. producer. The chairman has disclosed that when ore from the No. 2 shaft becomes available it is intended to increase the plant's capacity from 125,000 tons monthly to 150,000 tons. Sinking of the shaft is making good progress, the present depth being 4,595 ft. against a target of 5,500 ft. The shaft should be completed by the end of the year so that the new production plans look like being implemented during 1958.

At the same time, there is the warning that an increase in the scale of operations must depend on the opening of new stopes in the lower levels between the present workings and the No. 2 shaft. St. Helena most probably has a long and profitable future ahead, but for the present, capital expenditure requirements have to be kept in mind. In 1957 outgoings under this head are estimated at £1,100,000. It is forecast that next year this item will be somewhere between £500,000 and £800,000. Thus, a conservative dividend policy in relation to earnings must be expected at least for this year and next year. Thereafter, more generous distributions may well be possible out of earnings which may be enhanced by the capital expenditure programmes presently being executed.

The new Winkelhaak mine in the Kinross area of the Eastern Transvaal has virtually completed its shaft-sinking programme. Development is now expected to start in the final three months of the current year from the No. 1 shaft. Little significance, it would appear, should as yet be attached to such development results as have so far been obtained. They have applied to what the chairman describes as only an infinistesimal part of the company's property.

Marievale Consolidated is a well-established dividend-payer, which, in view of additional tonnages now obtainable from the Kimberley reef and the healthy ore reserve position, intends to expand the nominal capacity of the plant from 72,000 tons monthly to 92,000 tons at an estimated cost of £410,000 over two years. This expenditure, the chairman has said, could be financed largely if not entirely out of accumulated profits. These new plant extensions are likely to be completed in the next 18 months.

DWINDLING COPPER PROFITS

As had been expected, further appreciable declines in the earnings of Roan Antelope and Mufulira, the two important Northern Rhodesian producers in the Rhodesian Selection Trust group, have been announced in respect of the first three months of this year. Mufulira's profit before tax fell to £2,280,000, against £2,510,000 in the December quarter of last year, but there was an even bigger fall in Roan's profit from £1,920,000 to £1,480,000. Thus, Roan's profit before tax for the first nine months of its current financial year has been virtually halved at £5,320,000 and there must be the possibility that the interim, due to be announced shortly, may well be appreciably cut. Mufulira has fared rather better over the same period, partly because sales have held up better, but even here profits for the first nine months have dropped to £7,640,000 against £11,960,000 in the same period of 1955-56.

This in turn is likely to affect the pending interim dividend of the controlling company, Rhodesian Selection Trust. However, profits of the new and smaller Chibuluma mine in the same group continue to improve as output expands. Production at this property started in March, 1956. For the nine months to March 31 last, Chibuluma's untaxed profits have come out at £1,400,000 from the disposal of 13,605 tons of the metal. R.S.T. has a 64 per cent holding in both Mufulira and Chibuluma and the estimated profit before tax attributable to R.S.T. from these mines is given at £5,710,000 for the first nine months against £7,580,000.

Copper share prices have, of course, come back appreciably since the metal was being dealt in at around £430 per ton in March, 1956. In accordance with its "fixed" price sales policy, the R.S.T. group brought it quotation back from £270 to £240 in February and it remains at this level. It seems probable that the prospective cut in this year's dividends is largely discounted so far as the share market is concerned. But any recovery would appear equally dependent on the ability of copper to improve tangibly on the present resistance point of around £240.

OLD RAND "BREAK-UPS"

The future of some of the older Rand gold mines has come under useful discussion at several of the recent annual meetings held in Johannesburg. For instance, the chairman of Crown Mines, the big old Central Rand producer, in considering what the eventual "break-up" possibilities of the mine might be, has pointed out that the freehold of 6,881 acres near Johannesburg has an ultimate realizeable value which at this time cannot usefully be estimated. The ground is mostly subject to restrictions imposed by the Gold Law and, apart from other factors, the eventual value of much of the ground will have to be related to the South African government's policy of establishing new industrial townships.

There is thus still a big question mark overhanging Crown's eventual break-up. At the same time, it is recalled that 14 acres of the company's freehold were disposed of to the S.A. Railways for £4,333 per acre and that a limited amount of other ground might be expected to realize equally high prices at some time in the future.

Government Areas, the old Eastern Rand producer, has come in for a fair amount of investment consideration lately, much of it wrongly informed, also by reason of ultimate "break-up" possibilities. At the recent meeting the chairman has been able to give an official appraisal of the company's future position. If, as is most likely, gold mining operations have to cease in the near future, the mine, he says, will be left in

such a condition that work can be restarted at some future date should a change in the price of gold render such an operation desirable. Certain items of plant and machinery may be earmarked for this purpose, but the rate of milling which may be provided for at some future date will not be more than 50,000 tons monthly.

Meanwhile, the salvaging of underground equipment has already started. But there are two further points to be made about the Government Area position. The first is that the company owns no freehold property. The chairman emphasizes that the book value of the mining assets as shown in the balance sheet at £2,800,000 does not reflect their depreciation during the life of the mine and that the break-up value of these assets is likely to be only a relatively small fraction of the book value. This sharply contradicts some recent optimistic estimates that have been heard.

Moreover, the question of any immediate liquidation of the company does not arise since pyrite production will continue in terms of the present sales contracts at least until September, 1964. Profits from this source are presently running at £180,000 a year but should mining be discontinued this figure would have to bear additional administration and overhead charges.

WILLOUGHBY'S PAYS MORE

Profits of Willoughby's Consolidated expanded in the year ended on September 30 last. After all charges, including taxation, profits amounted to £46,376 against £29,811 in the previous year. The dividend was raised from 7½ per cent to 8¾ per cent.

Mining Men and Matters

Mr. Charles Sweeny has resigned from the board of Amalgamated Banket Areas.

★

Mr. D. R. Stuart has been appointed general manager of The Black and Decker Manufacturing Co. Ltd., of Toronto.

★

Pneumatic spaders, manufactured by Holman Brothers Ltd., have been purchased for excavation work on the Dartford Purfleet road tunnel.

★

Mr. Harold R. Villiers has been appointed a director of Ulu Klang Tin in place of Mr. H. Munro Scott, who has resigned.

★

Mr. Harold Gadd, Scottish regional sales manager (coated abrasives division), Minnesota Mining and Manufacturing Company, since 1953, has been promoted to general sales manager of the division.

★

Mr. Richard Tatchner has been appointed acting European zone manager in the export department of F. Perkins Ltd., of Peterborough.

★

Mr. J. D. Howden Hume and Mr. J. D. Young have been appointed directors of James Howden and Co. Ltd. Mr. J. S. A. Pearson and Mr. N. Zoller have been appointed local directors.

★

Mr. S. D. Strauss has been elected president of the American Zinc Institute. He is vice-president and sales manager of American Smelting and Refining Co., New York City.

★

The address of the head office of Australia's Bureau of Mineral Resources, Geology and Geophysics is now Wentworth House, 203 Collins Street, Melbourne, Victoria.

★

Sir George H. Nelson, Bart., chairman of the English Electric Group of Companies, has been installed as this year's president of the Institution of Mechanical Engineers.

★

At the annual general meeting of the British Rubber and Plastics Belting Manufacturers' Association, held on May 1, 1957, Mr. D. D. Marshall, of the Greengate and Irwell Rubber Co., Ltd., was re-elected chairman for 1957-58.

★

Mr. W. A. J. Sayer, until recently assistant general manager of the Machinery Division of George Cohen Sons and Co. Ltd., has been appointed managing director of George Cohen Sons and Co. (South Africa) (Pty) Ltd.

★

Tube Investments Ltd. have formed a new subsidiary company, Old Park Engineering Ltd. The new company will specialize in fabrications up to 40 tons weight for mining and other equipments.

★

Metropolitan-Vickers Electrical Co. Ltd. has announced that the postal address of the Transformer Department is now: Metropolitan-Vickers Electrical Co. Ltd., Transformer Department, Floats Road, Wythenshawe, Manchester 23.

Mr. I. M. Campbell Rodger, a manager of Johannesburg Consolidated Investment Co. Ltd., has been appointed a director of De Beers Industrial Corporation Ltd. with effect from May 6, 1957. Mr. Campbell Rodger was previously alternate director to Mr. D. A. B. Watson.

★

Mr. Walter Hochschild, president of the American Metal Co., has been elected chairman of the company from August 1. He succeeds Mr. Harold K. Hochschild, who, after 44 years' service, will retire to become honorary chairman and will remain a director. Mr. Hans A. Vogelstein, vice-president and treasurer, becomes president from August 1.

★

The Pulsometer Engineering Co. Ltd., of Reading, have acquired the whole of the issued Share Capital of Skyhi Ltd., of Isleworth, Middlesex, manufacturers of hydraulic pumps, jacks, lifts and agricultural loaders. Mr. W. T. S. Weir and Mr. A. H. Stead will continue as Joint Managing Directors and Mr. F. B. Duncan and Mr. J. S. Woodrow have joined the board.

★

At the 29th annual meeting of the Lead Industries Association held in Chicago, Mr. Andrew Fletcher, president, St. Joseph Lead Co., was re-elected President and Chairman of the Board of Directors to the Association. Mr. Kenneth C. Brownell, president of the American Smelting and Refining Co.; Mr. Joseph A. Martino, president of the National Lead Co., and Mr. Miles M. Zoller, vice-president of The Eagle-Picher Co., were re-elected Vice-Presidents. Robert L. Zeigfield continues as secretary-treasurer.

WINKELHAAK MINES, LIMITED

Mr. T. P. Stratten, the Chairman of the Company, in welcoming Members to the First Annual General Meeting of the Company held at Johannesburg on May 3, 1957, said he wished to amplify the information contained in the published Reports and Accounts and bring Members up to date in regard to the progress made since the year-end, reminding them that it was less than 17 months since the Company was formed.

Shaft Sinking and Development

He said that the initial shaft-sinking programme was virtually complete. No. 1 Shaft had only some 40 feet to go to its final depth of 1,580 feet, after which it would be possible to commence equipping the shaft, holing ore passes and cutting stations. No. 3 Shaft had been sunk to its final depth of 1,584 feet and was fully equipped, but a good deal of station cutting remained to be done. Development was expected to begin from No. 1 Shaft, the westerly one of the two, in the fourth quarter of this year. Development from No. 3 Shaft was just starting.

Each of these shafts was served by its attendant ventilation winze, situated updip from the shaft, No. 1A ventilation winze being 350 feet south of No. 1 Shaft and No. 3A, 700 feet south of No. 3 Shaft. The Kimberley Reef in the latter was only some 858 feet below surface. These two winzes were completed during the second half of last year and virtually all development to date had been done from them. Once development was carried out from Nos. 1 and 3 Shafts the present rate of development would be considerably increased.

Up to the end of April 8,023 feet of development had been accomplished. Of this 2,120 feet were driven from No. 1A ventilation winze, chiefly in cross-cutting towards the reef horizon to the south-west and making a connection with No. 1 Shaft, and had practically all been off reef. From No. 3A ventilation winze 5,903 feet was accomplished. Here again much of the development had consisted of cross-cutting and in places the drives had been off-reef due to faulting. Of the 2,205 feet on reef and sampled 810 feet, or 37 per cent., proved payable, averaging 9.8 dwt. over 37 inches, equivalent to 361 inch-dwt. Most of the on-reef footage was developed in a very limited area to the West of No. 3A Winze. As Members had been advised, four intersections of the reef in the No. 3 Shaft area averaged 383 inch-dwt., compared with a value in the shaft itself of 313 inch-dwt. The development footage accomplished to date was infinitesimal in relation to the large lease area.

The limited development to date had confirmed faulting of about the dimensions originally anticipated from borehole data. In respect of water, the difficulties had also been no greater than anticipated, though until pumps could be installed each fissure, regardless of size, had to be sealed off as a precautionary measure. Permanent pumps would be

established as soon as possible at Nos. 1 and 3 Shafts.

Reduction Plant

In the light of the results to date, the Directors at the beginning of the year decided to proceed with the erection of a reduction plant with an initial capacity of 60,000 tons per month. Long term delivery items of plant had been ordered, and work on the foundations was already well advanced. It was anticipated that it would be possible to commence trial crushing in about a year's time.

No. 2 Shaft

In order to put the mine in a better profit-earning position, it would be necessary in due course to increase the milling rate from 60,000 tons per month to 100,000 tons per month or more and to achieve this and generally to open up the mine a further shaft would be needed. This shaft, No. 2, would be the main hoisting shaft of the mine. It would be 2,500 feet east of No. 1 Shaft, and would be sunk to a depth of about 3,750 feet. It was not intended to start sinking this year, but a cementation borehole had recently been started on the shaft site with a view to sealing off by cementation any water-bearing fissures in the path of the shaft.

Surface Construction and Housing for Employees

Very good progress had been made with the mine buildings and plant and European and Native housing, and the initial housing programme was complete. Housing for European employees was being provided by the Company's wholly-owned subsidiary, Evander Township, Limited. A total of 229 houses had been completed in Evander Township. The single men's residence was opened by Mrs. P. M. Anderson, after whom the Township had been named, on February 27 this year.

Finance

Up to the end of last month expenditure on property, shafts, plant, equipment, development and other items, including finance provided by the Company for Evander Township, Limited, amounted to £3,620,000, leaving a balance of £2,380,000 of the £6,000,000 provided for when the Company was formed. It was estimated that this would finance the Company's operations into the last quarter of this year, but thereafter about £2,000,000 would be required to complete the present programme of taking the mine to production at 60,000 tons per month, and further amounts would be needed to get under way the expansion of operations to 100,000 tons per month. The amount of the further finance to be raised, when it should be raised and whether this should be by loans or further issues of shares or partly one and partly the other, had still to be decided.

Conclusions

The Chairman felt that in view of the difficulties inseparable from opening a property remote from major centres of population the progress made had been most satisfactory.

The Report and Accounts were adopted. All the Directors of the Company, who retired at the meeting, were re-elected.

The resolution amending the Company's Articles of Association in regard to Directors' borrowing powers was passed unanimously.

ST. HELENA GOLD MINES, LIMITED

Mr. C. B. Anderson, Chairman of the Company, in addressing members at the Annual General Meeting held at Johannesburg on May 3, 1957, referred with deep regret to the death on September 24, 1956, of Mr. J. S. Walker who was one of the original directors of the Company and who had been Chairman since November 6, 1954.

Operating Results in 1956

He stated that in 1956 the tonnage milled increased by 74,000 tons to 1,312,000 tons and the yield improved by 0.47 dwt. to 5.81 dwt. per ton so that notwithstanding a slight fall in the average price received for gold the working revenue at £4,792,517 was £637,217 higher than in 1955. As a result of the increases in remuneration granted to employees towards the end of 1955 and the higher pneumoconiosis charges and some increase in electricity tariffs, working costs rose in 1956 by 3d. per ton milled to 40s. 11d. per ton milled despite the expansion in the scale of operations. The working profit for the year was thus £2,106,462 being an increase of £466,144.

The net profit was £2,039,093. Capital expenditure, mainly in connection with No. 2 Shaft programme, amounted to £1,311,349; £40,000 was transferred to Loan Redemption Reserve and two dividends, totalling 1s. 1d. per share, were declared and absorbed £521,354 so that the carry forward was increased by £168,853 to £851,841.

Development and Ore Reserve

The total development footage driven at 39,848 feet was somewhat lower than in 1955. Of the 16,670 feet on Basal Reef and sampled, 9,220 feet, or 55 per cent., proved payable averaging 12.5 dwt. over 31 inches equivalent to 387 inch-dwt. There was a slight reduction in the amount of payable footage, but the percentage payability and the average inch-dwt. figure were very much the same. Ore reserves rose by 250,000 tons to 3,250,000 tons, having an average value of 6.1 dwt. over an estimated stoping width of 56 inches. This represents an increase of 0.1 dwt. in the value and 1 inch in the width.

Expansion Programme

The Chairman stated that the capacity of the reduction plant was last year increased to over 125,000 tons per month. When ore from the No. 2 Shaft became available it was intended to increase the capacity by a further 25,000 tons a month. In spite of minor hold-ups and setbacks very satisfactory progress had been made in the sinking of No. 2 Shaft. This large 24½ foot diameter circular shaft had reached a depth of 4,595 feet below surface. It had been concrete-lined to 4,575 feet and equipped to a depth of 4,466 feet. In parallel with sinking the development of four stations and the connecting ore and waste pass system was in progress. The shaft was to be sunk to a final depth of 5,500 feet below surface and if present progress was maintained sinking should be completed before the year end.

Thereafter a period would be required for completing station cutting and additional ore and waste passes, but at the earliest possible moment it was intended to drive a cross-cut westwards from the shaft to make a connection with the existing workings on 14 Level. In addition, work would be pressed forward with the preparation of stopes in the vicinity of the shaft. However, even if no delays were experienced, it was unlikely that this area would be able to make any worthwhile contribution of tonnage to the mill before 1959.

Future Outlook and Finance

The Chairman said that any increase in the scale of operations of the Company—and indeed maintenance of the present output and profits for more than a few years ahead—depended to a large extent on opening up new stopes in the deeper levels of the mine, initially between the present workings and No. 2 Shaft. While development in the existing mine and on neighbouring properties suggested that this was an area from which much profitable gold may be won, little was known about this portion of the Company's lease area.

In addition there was still a considerable amount of capital expenditure ahead to be financed out of profits yet to be earned. Thus capital expenditure during the current year was expected to be of the order of £1,100,000, and in 1958 would probably be in excess of £500,000 and, if progress continued to be rapid, might amount to as much as £800,000.

For these reasons the Directors had deemed it wise for the present to pursue a conservative dividend policy and to build up further the Company's cash resources.

Results in First Quarter of 1957

During the first quarter of 1957 the ore milled totalled 350,000 tons and the working profit was £560,529. Capital expenditure amounted to £211,335. The development footage driven totalled 11,844 of which 3,985 feet were on Basal Reef and sampled, disclosing 1,750 feet, or 44 per cent., payable averaging 10.6 dwt. over 36 inches, equivalent to 380 inch-dwt.

The Report and Accounts were adopted. The retiring Directors, Messrs. E. M. T. Matthews, S. Spiro and T. P. Stratten were re-elected.

The resolution dispensing with the return required under Section 70 quin (9) of the Companies Act, was passed unanimously.

A SENIOR MINING ENGINEER

aged 30—40, required for a new alluvial mining project in West Africa. Candidates should hold a Degree or Diploma in Mining, and have had several years' experience in the field of alluvial mining operations. Duties would comprise supervision of milling operations. Salary in the range £1,600/£2,000 per annum; 15 months' tours followed by three months' home leaves; free furnished accommodation; first-class passages and free medical services; contributory pension scheme; free life assurance.

Applications, which will be treated in strict confidence, should contain full personal details and also qualifications and experience, quoting reference S.4—Write Box 596, The Mining Journal Ltd., 15 Wilson Street, Moorgate, London, E.C.2.

THE BRITISH ALUMINIUM COMPANY

INCREASED INCOME

The annual general meeting of The British Aluminium Company, Ltd., was held on May 7 at Grosvenor House, Park Lane, London, W.

Marshal of the Royal Air Force, The Rt. Hon. Viscount Portal of Hungerford, K.G., G.C.B., O.M., D.S.O., M.C. (Chairman), in the course of his speech, said :—

The consolidated income for the year after tax amounted to £1,584,269, which compares with £1,426,717 for the previous year.

The exceptional drought in Scotland which influenced our primary operations adversely during 1955 continued into 1956. However, conditions improved steadily during the year and the loss of output was much less severe than in 1955. Reservoir levels are now satisfactory.

The demand for our general semi-fabricated products eased slightly during the year under review. We attribute this, at least partially, to two factors : firstly, improvement in the world supply of ingot resulting from new capacity in various countries enabled our customers to reduce their stocks owing to the removal of anxiety about supplies; secondly, the credit squeeze accentuated the tendency towards stock reduction. Our subsidiary and associated companies operated satisfactorily throughout the year.

The price of aluminium ingot, which is influenced in this country by the North American price, increased during last year by a total of £26 per ton and now stands at £197 per ton. This increase, coupled with increases in wages and other costs, made it necessary to adjust the prices of our semi-fabricated products.

Factors Affecting Trading

During the latter months of 1956 and the early months of the current year the trading position was adversely affected to some small extent by a number of factors, among them the credit squeeze, hire purchase restrictions, a general recession in the motor industry and industrial unrest. Our fortunes are closely linked with general trading conditions in the country, and the short-term future is not therefore easy to forecast accurately.

We have the greatest confidence in the long-term future of our metal, and there is no doubt that the removal of the metal shortage which has been so hampering to development work will enable us progressively to expand. It is obvious that there must be considerable reluctance on the part of users to make all the adjustments necessary for the use of a new material when there is no guarantee of the availability of supplies. We are therefore looking forward with other members of the industry to expanding demand resulting from an active programme of development work unhampered by anxiety regarding metal supplies.

Expansion of Export Orders

Last year we were able to expand our export orders in spite of keener and more intensive competition. In the electrical field, reductions which have taken place in the price of other non-ferrous metals have not challenged aluminium's position as the cheapest available conductor of electricity, and it should not be forgotten that in the case of high voltage overhead transmisson lines, aluminium established this position many years ago in the days when the price per ton of copper was considerably lower than that of aluminium.

Since then aluminium has made steady progress in other sections of the electrical industry, in some of which, notably the insulated cables and wiring sections, the price advantage is not so spectacular owing to the composite use of other materials.

The use of aluminium in funnels, superstructures and other marine components is technically established, and its economic advantages are becoming appreciated. It is interesting to note that in the newest passenger liners now being built for the Orient and P. & O. Lines extensive use will be made of welded aluminium in the superstructures.

The production of aluminium foil for packing, wrapping and insulation in the United Kingdom has increased during the last ten years from 5,000 to 20,000 tons a year, and we share the confidence of the foil rollers in the further expansion of this market shown by the substantial additional capacity planned to commence production within the next year or two.

Canadian Subsidiary

Last year I informed you of the formation of our new Subsidiary, Canadian British Aluminium Co. Ltd., and you will wish to have a report of progress made to date. This has been well up to schedule, and the amount of work achieved has been most impressive, reflecting great credit on all concerned. A temporary interruption recently, caused by a dispute between two Trades Unions, has resulted in some slight delay. Work however was fully resumed before the end of March, and any delay which may occur should not be material. We still expect that we will pour the first ingot about the turn of the year.

You may have seen an announcement in the Press relating to our proposed association with Consolidated Zinc Corporation in the Commonwealth Aluminium Corporation. For some years past, as you are already aware, we have been exploring potential hydro-electric schemes in Papua in conjunction with the Australian Government. This exploration work also extended into the bauxite field, and certain deposits were discovered in Northern Australia.

The Accounts

Coming now to the Accounts, you will see in the Consolidated Profit and Loss Account that the total Manufacturing and Trading Profit for the year amounts to £3,294,439 which is £45,976 greater than in the previous year.

When we add to the net income of the Parent Company the amount brought forward from the previous year and deduct the appropriations and provisions set out in the Directors' Report, we are left with the sum of £1,055,172. After taking into account the dividend for the year on the Preference Stock, we recommend a Final Dividend of Eight per cent. on the Ordinary Stock which, with the Four per cent. already paid, makes Twelve per cent less Tax for the year. This leaves £520,422 at credit of Profit and Loss Account of the Parent Company, an increase of £26,597.

The report was adopted.

THE VEREENIGING ESTATES, LIMITED

(Incorporated in the Union of South Africa)

MR. T. COULTER'S REVIEW

The following extracts are from the statement by the Chairman, **Mr. T. Coulter,** which has been circulated with the annual report and accounts :

Accounts	1956	1955
Net Profit for the year	1,078,933	1,017,337
Adding the Balance of Profit brought from the previous year of	214,148	238,179
the sum to be dealt with is	1,293,081	1,255,516
The following appropriations were made :—		
Provision for Taxation	54,254	33,900
Amount written off Share Investments	—	113,718
Amount transferred to General Reserve Account ...	100,000	—
Interim Dividend of 2/6d. per Stock Unit	343,750	275,000
Provision for a Final Dividend of 4/- per Stock Unit declared on January 31, 1957	550,000	618,750
The total appropriations were thus	1,048,004	1,041,368
leaving a balance of profit carried forward to the current year of	£245,077	£214,148

The total distribution to stockholders for the year was thus 6s. 6d. per stock unit which is unchanged compared with the previous year.

Share Investments in subsidiary companies reflect an increase from £7,033,969 to £7,432,653 due to the additional holding acquired in Amalgamated Collieries of South Africa, Limited. The market value of these investments at December 31, 1956, was £14,039,871 as compared with £12,796,821 at December 31, 1955.

Current assets totalled £1,658,411 and exceeded current liabilities by £1,070,093.

The charge against profits for taxation includes the sum of £33,254 in respect of additional tax retrospective to the year 1950. The results quoted above are in respect of the company's own accounts before consolidation.

Colliery Interests

Certain of the collieries in which your company is interested financially have had the benefit of the increase in the controlled price of coal granted in November, 1955, whilst Springfield Collieries Limited is now receiving a higher price for the coal supplied to the Electricity

Supply Commission under long term contract.

It is already clear, however, that rising working costs are tending to eat away the higher profit margins which were enjoyed during 1956 and this process is accelerated by increasingly onerous burdens placed on the mines by both Parliament and the bureaucracy.

AMALGAMATED COLLIERIES OF SOUTH AFRICA LIMITED.—Results of this subsidiary are as follows:—

	1956	1955
Sales tons ...	6,396,728	6,881,884
Net Profit after Taxation ...	£741,428	£650,025
Annual Dividend, per share ...	4s.	3s. 6d.

This company operates Cornelia Colliery at Vereeniging, Schoongezicht Colliery in the Middleburg district and Springfield Colliery, near Balfour in the Heidelberg district, the last named colliery being owned by the subsidiary Springfield Collieries Limited.

THE CORONATION COLLIERIES LIMITED.—Results of this company's operations are:—

	1956	1955
Sales tons ...	1,108,828	1,050,029
Net Profit after Taxation ...	£429,145	£356,045
Rate of Annual Dividend, per share	1s. 9d.	1s. 9d.

Although it is estimated that the company's coal reserves on the Farm Kromdraai in the Witbank district will last a further 9 years at the current rate of production, consideration is being given now to the finances involved in establishing a replacement pit. It has been decided to accumulate funds for this purpose but it is not contemplated that it will be necessary to reduce the present dividend rate.

The company retains its substantial interest in its subsidiary, Vryheid Coronation Limited which produced 616,882 tons of coal during the year. Coke production for the year totalled 502,964 tons as compared with 477,073 tons in 1955.

SPRINGBOK COLLIERY LIMITED. — The operating results of this company are:—

	1956	1955
Sales tons ...	875,758	870,530
Net Profit after Taxation ...	£209,810	£172,787
Rate of Annual Dividend, per Stock Unit ...	1s. 7½d.	1s. 7½d.

It is estimated that the cost of opening up and equipping the No. 5 seam for supplying blend coking coal and gas coking coal to the order of 65,000 sales tons per month will be approximately £600,000. Arrangements have been made for your company to provide temporary loan facilities so as to allow the capital expenditure programme to proceed, but it is intended in due course to finance the cost of this coking coal venture by the issue of new shares.

TRANSVAAL COAL CORPORATION LIMITED.—Your company owns the total share capital of £250,000 in this subsidiary which owns an extensive coalfield in the neighbourhood of the Springbok and Blesbok collieries in the Witbank district. The company has a substantial interest in Blesbok Colliery Limited.

Dividends received during the year amounted to 1s. per £1 share.

SOUTH AFRICAN COAL ESTATES (WITBANK) LIMITED.—Your company owns a substantial interest in this company.

The following particulars of sales and dividends are submitted in respect of the company's financial year which ends on June 30:—

	1956	1955
Sales tons ...	1,706,895	1,612,885
Net Profit after Taxation ...	£290,108	£239,930
Annual Dividend, per share ...	3s. 9d.	3s. 6d.

The improved sales tonnage and net profit figures enabled the Directors to increase the dividend rate slightly and still retain a portion of the profits to build up cash resources for the capital expenditure that will be incurred during the next few years in opening and equipping of Landau No. 4 mine ultimately destined to replace the No. 3 mine.

Refractory and Brick Manufacturing

VEREENIGING BRICK AND TILE COMPANY LIMITED.—Results of operations for 1956 in comparison with 1955 are:—

	1956	1955
Net Profit after Taxation ...	£397,250	£392,257
Rate of Annual Ordinary Dividend, per share	1s. 1½d.	1s. 1½d.

This subsidiary had a record year with turnover and profits at a level slightly above the figures for 1955. Building brick and salt-glazed ware sales reflected a noticeable drop due to the stagnant conditions that prevailed throughout the Union in the building industry during 1956: but this drop was more than counter-balanced by improved results in refractories.

ECONOMICS OF SOUTH AFRICAN GOLD MINING

by

R. E. WALLACE and A. S. ROBERTSON
With illustrations by JOHN L. TURNER

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This book tips no shares, nor does it set out to evaluate the prospects for any particular mine. Its sole purpose is to present the essential background knowledge without which a considered view of this or that South African gold mining share is not possible. It does so in terms which the lay investor can understand, yet in sufficient detail to enable him to put the principles involved to practical use.

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THE BRITISH PETROLEUM COMPANY

GROUP SALES REACH NEW RECORD

RATE OF EXPANSION RETARDED BY SUEZ CRISIS

The forty-eighth annual general meeting of the British Petroleum Company Limited will be held on May 30 in London.

The following is an extract from the Statement by the Chairman, **Mr. N. A. Gass, C.B.E., M.C.,** which has been circulated to Stockholders.

The expansion in the BP group's business in 1956, as described in this Statement, would have been at a higher rate but for the retarding effects in the last two months of the year of the closure of the Suez Canal, and the damage in Syria to the Iraq Petroleum Company's pipeline system to the Eastern Mediterranean.

The early months of 1957 have been a difficult period in which we have experienced a reduction in our trade, and the growth of consumption in the European area, where we have a large marketing interest, has, for the present, slowed down. But the basic facts of the world's growing forward energy requirements, and the increasing contribution to be made by oil, remain unchanged, and we can look forward to an expanding business granted the stable conditions requisite for the progressive development of Middle East oil-production on which the economic future of the producing countries in that area so largely depends.

In the Consolidated Profit and Loss Account the Trading Profit, after providing for depreciation and amounts written off, was £124,171,691 for 1956 compared with £111,683,900 for 1955. The increase of £12,487,791 is due, in the main, to higher sales tonnages.

Depreciation and Amounts written off totalled £25,202,874 compared with £22,143,401 for 1955, the increase being mainly in the amount written off Exploration Interests.

The total taxation charge is £76,324,120 of which £64,036,101 is Overseas Taxation arising mainly in the countries of production: Iran, Iraq, Kuwait and Qatar.

It is the intention to publish yearly and half-yearly Group Income Statements, the first of these is issued with the Accounts. The initial half-yearly statement, for the first six months of 1957, will show comparative figures for the corresponding period of 1956, and it will be appreciated that the income in the current half-year will be affected by the adverse conditions.

Capital Expenditure Programme

The estimated amount of contracts for Capital Expenditure at the end of last year was £120 million (of which £88 million relates to shipping, including, in part, the expenditure on tankers to be dealt with under the new tanker-financing arrangements). It has to be anticipated that actual Capital Expenditure will continue at a high rate, and will necessitate the continued retention in the business of a very substantial proportion of the earnings.

Production and Refining

During 1956 we obtained from Kuwait, Iraq, Iran and Qatar, our main sources of supply, a total of about 49,500,000 tons of crude oil, or 4,000,000 tons more than in 1955. But for the curtailment of Middle East production necessitated by the Suez crisis in the last two months of the year, this increase would have been substantially greater. Larger production in Iran was the principal contributor towards the increase in our crude oil supplies.

In Iraq, the companies in which we have an interest continued the development of their established fields and exploration for further reserves. On November 2, the destruction in Syria of the pumping stations on the pipelines from Iraq to the Mediterranean brought the flow of oil from the Iraq Petroleum Company's and Mosul Petroleum Company's fields to a standstill.

In Trinidad, Trinidad Northern Areas Limited continued to increase production from the deviated wells drilled from shore, and from the off-shore Soldado field discovered last year in the Gulf of Paria. During the year we increased our interests in Trinidad, by the acquisition of stock in Trinidad Petroleum Development Limited.

In 1956 our total refinery throughput was 32,500,000 tons, 3,000,000 tons more than in 1955. But for the dislocation of crude oil supplies caused by the Suez crisis our 1956 throughput would have been about 2,000,000 tons larger.

Of the 41 ships referred to last year as under construction or on order one, recently completed, has been purchased by Tanker Charter Company Ltd. and chartered to us. The remaining 40 ships of that building programme are all due for completion during the next three years. In addition, BP Tanker Company has placed orders for a further number of new tankers, including several of 65,000 deadweight tons.

Distribution and Sales

The BP group's sales of crude oil and refined products in 1956 rose to the new record total of 53 million tons. The increase over the preceding year was 11 per cent. or 5 million tons—almost equally divided between crude oil and refined products—and thus was less by 1 million tons, than the 6 million ton increase attained in 1955. This is attributable to the effects of the Suez crisis; prior to this, we were expecting to achieve in 1956 an expansion of 8 million tons, or 17 per cent.

PERSONNEL:—In addition to the increased volume of work caused by the continued expansion of operations in 1956, the BP group's staff had to deal with many extra problems caused by the Suez crisis in the latter part of the year. For the good results achieved in such circumstances, special credit is due to personnel at all levels.

It is again a very real pleasure to record the Board's appreciation of the excellent and devoted services of the group's personnel at home, afloat and overseas.

RECORDS ENGINEER required for LARGE-SCALE EARTH-MOVING OPERATIONS in India. Applicants should be qualified mining or civil engineers with wide experience of heavy-duty earth-moving equipment and must be conversant with modern methods of collecting, recording and interpreting working control information. Apply, giving full particulars, to Project Engineer (Neyveli), Powell Duffryn Technical Services Ltd., 19 Berkeley Street, London, W.1.

RHODESIA-KATANGA COMPANY LIMITED

The Annual General Meeting of Rhodesia-Katanga Company Limited was held on May 7 at The Chartered Insurance Institute, E.C.2. **Capt. Rt. Hon. Charles Waterhouse, M.C., D.L., M.P.** (Chairman) presided. In his review, circulated with the Report and Accounts, the Chairman drew attention to the following features:

The development of the Kansanshi Copper Mine (in which the Company holds an equity interest of 35.24%) depends upon proving an adequate supply of sulphide ore of a payable grade, while its progress must be influenced by such factors as the price of copper, inflation of costs of production and increase in railways rates, which are the common concern of all copper producers. Development results during the year ended December 31 1956 were better than those forecast when the Kansanshi Copper Mining Company Limited decided, in spite of all the risks, to start on a programme of self-financing exploratory development at Kansanshi. Many uncertainties have still to be faced, but the Board feel that the developments of the last twelve months make it desirable to give shareholders the opportunity of following their faith in the Mine by subscribing for an issue of 6% Unsecured Convertible Loan Stock which will enable the Company to maintain its proportionate equity interest in the Kansanshi Company by providing £196,652 out of a loan of £500,000, carrying the right to subscribe at any time up to July 1 1960 for Ordinary Shares at par, which existing shareholders in that Company have been asked to make available.

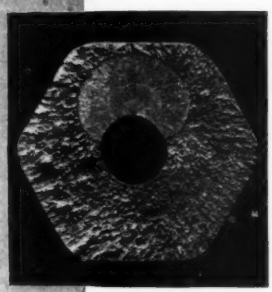
A commencement has been made on the exploration of the Mineral Areas, covering 2,500 square miles in Northern Rhodesia, which the Company owns subject to 15% interest of the British South Africa Company. The exploration work to be carried out by Rio Tinto (Northern Rhodesia) Limited as Consulting Engineers will be a long and painstaking performance.

Consent has been received from H.M. Treasury for an issue to shareholders of £250,000 6% Unsecured Loan Stock, bearing interest at 6% per annum, convertable into Ordinary Shares at 40/- per share until July 1 1965, and redeemable at par on the same date. The issue has been fully underwritten by Tanganyika Holdings Limited, and the funds thus obtained will be utilized in providing the loan facilities required by Kansanshi Copper Mining Company Limited and in financing the exploration programme in the Mineral Areas. Application forms will be issued to shareholders in the course of the next few days.

The Report and Accounts were adopted, and approval was given to the increase of the Company's Authorized Capital from £1,500,000 to £2,000,000.

For Central Mining coys see p.602.

SR—the new Sandvik Coromant treatment gives steels 50% longer life

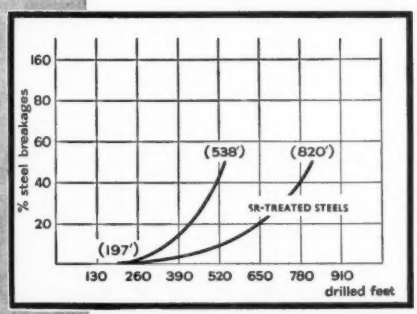


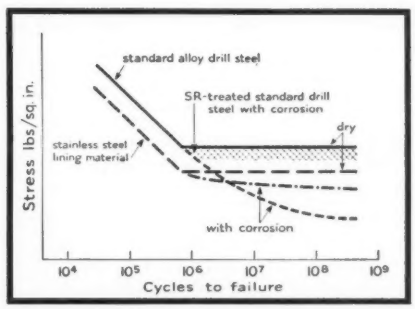
Corrosion invariably lessens the fatigue strength of drill steels and causes earlier breakages. The breakages start from corrosion craters and indentations, around which ever-widening areas of worn surfaces are formed. (See picture of cross-section.)

The main cause of corrosion is moisture—so effective protection of the steels against moisture during both storage and actual drilling eliminates corrosion and gives longer life to the steel. This protection is given to Coromant integral steels by the SR treatment, a new exclusive Sandvik feature.

PRACTICAL TESTS GIVE CONCLUSIVE PROOF

The diagram on the left shows clearly that SR-treated steel rods have a 30%-50% longer working life than those of untreated steels. Figures are based on extensive practical tests, which resulted in an average drilling depth of 820 ft. for SR-treated steels as against 530 ft. for untreated steels, before rod breakage.





HOW SR TREATMENT PREVENTS CORROSION

SR treatment is a new method of surface protection developed by Sandvik. It protects both the wall of the flushing hole and the outer walls from corrosion by a thin but strongly adhesive layer. The fatigue properties of the steels therefore correspond to those valid under dry conditions. On the wall of the centre hole, usually subjected to water flushing, the SR layer is everlasting, and *does not decrease the diameter of the flushing hole*. This is a distinct improvement on the old means of coating the centre hole with stainless steel, which lessens the diameter of the flushing hole, prevents full and effective flushing, and thus diminishes the drilling rate. Moreover, stainless steel has a lower fatigue strength than standard alloy drill steel.

Sandvik Coromant drill steels have been closely developed together with Atlas Copco rock drills. This drilling combination has for years been the most widely used in the world.

Sandvik Coromant integral steels, extension steels and detachable bits are supplied by Atlas Copco. It is the largest group of companies specialising solely in the development and manufacture of compressed air equipment. It embraces Atlas Copco companies or agents manufacturing or selling and servicing Atlas Copco equipment in ninety countries throughout the world. For further details of the equipment featured here, contact your local Atlas Copco company or agent, or write to Atlas Copco AB, Stockholm 1, Sweden.

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Manufacturers of Stationary and Portable Compressors, Rock-Drilling Equipment, Loaders, Pneumatic Tools and Paint-Spraying Equipment

THE CENTRAL MINING — RAND MINES GROUP

Extracts from Chairmen's Statements circulated to Shareholders

(After the Annual General Meetings have been held, reports of the proceedings will be made available on request to the London Secretaries—A. Moir & Co., 4 London Wall Buildings, London, E.C.2.)

CROWN MINES, LIMITED

(Incorporated in the Union of South Africa)

The Sixty-first Ordinary General Meeting of shareholders was held in Johannesburg on May 7, 1957. The following is an extract from the circulated statement by the Chairman, **Mr. P. H. Anderson**, dated April 30, 1957.

WORKING RESULTS

During the year under review, 3,395,000 tons of ore, giving an average yield of 3.074 dwt. per ton, were milled, and 521,833 ounces fine of gold were recovered. In the previous year the relative figures were 3,588,000 tons milled, with an average yield of 3.205 dwt., and a recovery of 574,922 ounces fine of gold. The working revenue for the year was less by 1s. 7d. per ton milled. Working costs rose by 5d. per ton milled, and the combined effects of a lower tonnage milled, declining average yield, and higher working costs, served to reduce the working profit by £367,545 to £228,986.

ACCOUNTS

To the working profit of £228,986 was added £87,297 which represents the difference between sundry items of income and expenditure, giving a total profit of £316,283. The addition thereto of the unappropriated balance brought forward of £1,284,286 gave a total of £1,600,569 against which deductions totalling £414,362 were made in respect of taxation and two dividends of 3s. and 2s. per share respectively, as adjusted by a retransfer from Capital Reserve to the Income and Expenditure Account in respect of the realization of certain mining assets less the amount by which trade investments were increased, thereby leaving a balance in the Income and Expenditure Account of £1,186,207 to be carried forward to 1957. This unappropriated balance, together with revenue reserves totalling £242,346 was represented by current assets of £2,309,337 less liabilities and provisions amounting to £880,784.

PNEUMOCONIOSIS

The proportion of the outstanding liabilities under the Pneumoconiosis Act, 1956, which the Company would be called upon to pay in order to meet future pneumoconiosis compensation in the event of the mine being closed down has been finally determined at £1,083,216, a decrease of £28,784 compared with the previous apportionment as at March 31, 1955.

DEVELOPMENT AND ORE RESERVE

Due to increased operations on the Main Reef where sampling results showed small improvements in both payability and value, the overall footage developed during the year, at 86,885 feet, reflected an increase of 11,746 feet over the development accomplished during the previous year. Of this development 68,222 feet were on reef and 61,045 feet were sampled, giving an average value of 4.6 dwt. per ton over a channel width of 37 inches.

Despite the larger scale of development, the lower values encountered at depth and the restrictive effects of the Vierfontein Dyke resulted in a reduced tonnage of payable ore developed which, at 747,600 tons, was 206,100 tons less than that developed in the previous year. The average value of the payable ore developed was, however, 0.3 dwt. higher at 4.6 dwt. per ton.

The ore reserve tonnage was estimated at December 31, 1956, to be:—

	1956		*Previous Year*	
	tons	*dwt.*	*tons*	*dwt.*
Available	5,225,000	4.3	6,657,000	4.5
Shaft and Safety Pillars ...	3,759,000	5.6	3,640,000	5.6
Total	8,984,000	4.9	10,297,000	4.9

CURTAILMENT OF OPERATIONS

From the foregoing it will be appreciated that the likelihood of developing further substantial tonnages of ore is diminishing. The eastern and central areas of the mine leave room for little secondary development while in the western portion the amount of payable development has of late been unsatisfactory in that it has failed to replenish the ore reserves at a rate sufficient to match the operating capacity of the mine as a whole. During the year under review it became apparent that a trend towards marginal profits would soon become aggravated unless operations were re-organised with a view to effecting large-scale economies. After a thorough investigation of the fixed and fluctuating charges applicable to various sections of the mine it was decided to give notice to the Government, in terms of the Gold Law, of the Company's intention to curtail its operations materially. As the adverse factors had an inherent danger of becoming cumulative, a long-range plan, evolved to counteract the situation and to attempt to improve the profitability of the mine as a whole, was put into action after the close of the financial year. Initially the plan involves the cessation of operations in the lower eastern and lower central portions of the mine where ore reserves are virtually exhausted, the closing of No. 14B Shaft, the closing of one of the mine's three reduction plants, and the reducing of both European and non-European labour strengths accordingly. It is possible that in the light of the results achieved, both immediately and in the near future, the plan may require modification. However, it is the earnest hope of the Management that the swift action taken will improve the mine's profit - earning capacity although on a lower scale than in recent years.

It will be realised that at this stage in the life of the mine some degree of curtailment becomes inevitable and further curtailments should therefore not be unexpected during the next few years.

FREEHOLD PROPERTY

Shareholders will have noticed from the Report of the Directors that the Company owns freehold land totalling approximately 3,842 morgen, equal to approximately 8,132 acres.

Some interest has lately been focused on the possible "break-up" value of the Company's assets, principally on account of this large area of freehold land. It is, therefore, timeous to inform Shareholders of the potentialities of this asset.

Approximately 1,251 acres are situated near Heidelberg (some 30 miles south-east of Johannesburg), are of low value, and are leased for agricultural purposes. This land has a mineral potential which, although not exploitable under present conditions, makes it inadvisable to dispose of it for the time being but, being unproclaimed in terms of the Gold Law, it could be disposed of without much difficulty at a later date.

The remaining freehold (approximately 6,881 acres) is situated close to Johannesburg and is nearly all subject to restrictions imposed by the Gold Law. Much of this land is covered by sand and rock dumps, slimes dams and other normal surface occupations connected with mining operations, which serve to diminish its potential value and that of adjacent land.

In view of existing economic conditions, the general lack of development in the area, the proximity of non-European townships, and the fact that the future use of much of this land is dependent upon the present policy of the Government in regard to the establishment of new industrial townships, the ultimate realizable value of this land cannot be forecast on the basis of isolated transactions.

It will be recalled that in the Report of the Directors for the quarter ended December 31, 1956, it was stated that it had been agreed to accept from the South African Railways an offer of £60,668 in compensation for the expropriation of approximately 14 acres of the Company's freehold property. This expropriated land is situated close to the centre of Johannesburg and adjoins an area of industrial potential where land values are high. A limited area of the Company's freehold in this locality may, therefore, be expected to realize at least equally high prices at some time in the future, depending upon the abovementioned policy of the Government, but such high values cannot be expected for the acreage extending westwards and southwards when it becomes saleable.

Careful consideration is being given to the best possible uses to which the Company's land can ultimately be put, but Shareholders are reminded that uniformly high prices are not to be expected in the realization of this asset, and that it will take a considerable time to dispose of it after the land has been released from the restrictions of the Gold Law.

CITY DEEP, LIMITED

(Incorporated in the Union of South Africa)

The Fifty-sixth Ordinary General Meeting of shareholders was held in Johannesburg on May 7, 1957. The following is an extract from the circulated statement by the Chairman, **Mr. N. W. S. Lewin**, dated April 30, 1957.

WORKING RESULTS

The ore milled, at 1,851,000 tons, was 85,000 tons less than in 1955. The yield improved from 3.797 dwt. to 3.862 dwt. per ton milled. There was a slight increase in the average amount per ounce received for gold. The working revenue, at 48s. 7d. per ton, was 10d. per ton greater than in the previous year. Working costs at 47s. 7d. were only 1d. per ton milled higher than in 1955 and the working profit rose from £23,435 to £90,180.

ACCOUNTS

To the working profit was added a credit adjustment of £6,967 in respect of pneumoconiosis liabilities, interest received amounting to £20,754 and £6,138 being the difference between sundry items detailed in the Income and Expenditure Account, making a total profit for the year, before taxation, of £124,039. This, together with the unappropriated balance of £690,411 brought forward from the previous year, gave a total of £814,450, which was dealt with as follows:—

Dividend No. 71 of 6d. per share totalled	£50,671
A transfer to Capital Reserve in respect of expenditure on mining assets, less realisation of trade investments absorbed and provision for taxation amounted to	64,562 47
making a total of	115,280
and leaving an unappropriated balance to be carried forward to the current year's accounts of	699,170
	£814,450

The unappropriated balance, together with Retiring Gratuities and Abnormal Costs Reserves, was represented by net current assets totalling £930,436 as detailed in the Balance Sheet.

PNEUMOCONIOSIS

The proportion of the outstanding liabilities under the Pneumoconiosis Act, 1956, which the Company would be called upon to pay in order to meet future pneumoconiosis compensation in the event of the mine being closed down, has been finally determined at £545,055, a decrease of £9,008 compared with the previous apportionment as at March 31, 1955.

POSITION AT THE MINE

The intensified development and shaft sinking programme of recent years was eased somewhat during the past year with a consequent reduction in the footages accomplished in each category of work. The total footage developed was 12,173 feet less at 48,398 feet. The payable ore developed, at 871,300 tons, was greater by 29,200 tons than in 1955, but the value at 5.2 dwt. was 0.9 dwt. per ton lower. At the bottom of the mine development results on the Main Reef Leader horizon showed no marked change from those of the previous year and continue to be satisfactory.

In view of the possibility that payable values may persist beyond the present southern boundary of the Company's mining property, the permission of the Government was sought and has recently been granted to prospect in that area. The work will be undertaken in due course and if results warrant it, an application for a lease over additional claims will be made.

It will be some time before the question of the resumption of the sinking of K1 Sub-Incline Shaft can be considered as this will depend on the results of development from the pilot winze which is being sunk to test the reef on the other side of the Vierfontein dyke. The total footage sunk in Sub-Incline shafts during the year amounted to 1,473 feet or nearly 1,000 feet less than in 1955. The maintenance of a satisfactory ore reserve, however, may call for some increase in this footage.

The reorganisation of the hoisting and pumping arrangements, mentioned in my Statement last year, has made satisfactory progress. During the year two vertical and two incline shafts on the Nourse Section were stopped and since the year-end a further incline has ceased operating. Certain other technical improvements have also been carried out including the extended employment of scraper winches in stoping, and modified stoping methods leading to a greater concentration of work and output. As a consequence, the profit earning ability of the mine has shown a welcome improvement and unless there is any marked change in the circumstances governing the mine, there are some grounds for confidence in future operations.

ORE RESERVE

The available ore reserve, recalculated at the year-end at 3,750,000 tons, was 83,000 tons higher than at the end of 1955. The average value and stope width, however, decreased by 0.3 dwt. to 5.9 dwt. per ton and by 0.1 inch to 42.2 inches respectively.

PROPERTY

There is little further I can add to the remarks contained in the Directors' Report concerning the proposed sale of approximately 260 acres of the Company's freehold land to the City Council of Johannesburg. The Company has not been informed what progress the Commission, which has been appointed by the Administrator to examine the merits of the Council's scheme for the new market, is making. As the scheme presents numerous problems, it may be some time before the Commission has completed its investigations and is in a position to submit its recommendations to the Administrator.

DURBAN ROODEPOORT DEEP, LIMITED

(Incorporated in the Union of South Africa)

The Sixtieth Ordinary General Meeting of shareholders was held in Johannesburg on May 6, 1957. The following is an extract from the circulated statement by the Chairman, **Mr. N. W. S. Lewin**, dated April 29, 1957.

WORKING RESULTS

The ore milled at 2,188,000 tons was higher by 18,000 tons and the yield rose slightly by 0.077 dwt. to 3.464 dwt. per ton. There was a small increase in the average amount per ounce received by the Company for sales of gold. Working revenue, which totalled £4,769,428 for the year showed an increase of £151,597. Working costs at £4,112,504 were higher by 8d. per ton milled and the working profit, at £656,924, was £46,920 more than in 1955.

ACCOUNTS

The working profit was augmented by interest received amounting to £24,527, and by £13,961, being the difference between sundry items as detailed in the Income and Expenditure Account. The total profit for the year, before taxation was £695,412. After deducting provision for taxation amounting to £119,595 and adding the unappropriated balance of £652,285 brought forward from the previous year, a total of £1,228,102 was available for appropriation. A transfer to Capital Reserve in respect of expenditure on mining assets and trade investments absorbed £103,765 and two dividends of 1s. 3d. and 1s. 6d. per share respectively, totalling £319,688, were declared, leaving a balance of £804,649 in the Income and Expenditure Account to be carried forward to the current year. This unappropriated balance, together with Retiring Gratuities and Abnormal Costs Reserves aggregating £98,074, was represented by net current assets amounting to £902,723 as detailed in the Balance Sheet.

PNEUMOCONIOSIS

The proportion of the outstanding liabilities under the Pneumoconiosis Act, 1956, which the Company would be called upon to pay in order to meet future pneumoconiosis compensation in the event of the mine being closed down has been finally determined at £381,505, a decrease of £2,620 compared with the previous apportionment as at March 31, 1955.

DEVELOPMENT

The footage developed during the year was 66,699 feet, a decrease of 2,327 feet compared with the figure for 1955. This decrease was due mainly to the faulted conditions encountered in the most westerly workings of the mine where development above the 37th level has been brought to a standstill against faulting revealing Jeppestown shale. This indicates a considerable upthrow of the reef. Of the 34,040 feet sampled, 50.2 per cent proved payable at an average value of 8.6 dwt. over a channel width of 46 inches. The percentage payability on the Kimberley Reef increased from 38.1 to 56.3 per cent and the value from 307 to 357 inch-dwt. Although the percentage payability on the Main Reef dropped from 46.2 to 43.9 per cent, the value increased from 434 to 467 inch-dwt. The payable ore developed at 1,478,000 tons was lower by 38,000 tons, the value at 3.7 dwt. per ton being lower by 0.4 dwt. per ton and the width 1.1 inches higher than in 1955. The main reason for these changes in value and width is that 51 per cent of the payable ore developed compared with 24 per cent in 1955, was on the wider and lower grade Kimberley Reef. Development in the lease area was confined to the 40th level where 1,382 feet were driven on the Main Reef horizon ; 500 feet or 36.2 per cent were payable at an average value of 7.4 dwt. over 66 inches, equivalent to 487 inch-dwt. As mentioned in my statement last year, exploration on the 44th and 48th levels will take its place in due course in the general development programme.

ORE RESERVE

The available ore reserve re-calculated at the year-end totalled 8,232,000 tons or 94,000 tons less than a year earlier. There was a loss of 61,000 tons owing to an upward adjustment of the pay limits necessi-

tated by increased working costs. At 4.0 dwt. the average value of the available ore reserve was 0.1 dwt. lower than that at the previous year-end while the estimated stoping width of 60.8 inches was slightly higher.

Compared with the figures at the end of 1955, there was an increase of 316,000 tons in the available ore reserve on the Kimberley Reef while on other reefs there was a decrease of 410,000 tons. The latter was due primarily to the loss of development ends on the western boundary.

SHAFT SINKING

Work preparatory to the deepening of No. 5A Sub-Vertical Shaft continued : the excavations and foundations for the sinking hoists on the 45th level were completed and a start was made on the erection of the hoists and headgear. Sinking operations are being delayed until additional sump capacity for the pumping system is available on the 36th level. Work also continued on the equipping of No. 6A Shaft for hoisting men and material and the rock hoist was brought into commission. Nos. 8 and 9 Incline Shafts (Kimberley Reef) were sunk 373 and 985 feet to 137 feet below 10 Station and 98 feet below 12 Station respectively.

TRANSVAAL CONSOLIDATED LAND AND EXPLORATION COMPANY, LIMITED

(Incorporated in the Union of South Africa)

The Sixty-second Ordinary General Meeting of shareholders was held in Johannesburg on May 7, 1957. The following is an extract from the circulated statement by the Chairman, **Mr. T. Reekie,** dated April 30, 1957.

ACCOUNTS

The profit before taxation amounted to £372,024, which was £32,612 higher than the figure for the previous year. This was mainly due to the increased working profit at Van Dyks Drift Colliery. After allowing for a debit adjustment of £240 in respect of previous years, taxation absorbed £96,709, while the dividend, which was increased from the previous year's figure of 2s. 6d. to 3s. 0d. per share amounted to £139,536. The sum of £150,000 was transferred to General Reserve, and the Balance of Income and Expenditure Account was accordingly reduced from £697,204 to £682,983 at December 31, 1956. Your Board of Directors decided to increase the General Reserve by £150,000 to £1,000,000 reflecting the investment of funds in assets of the Company. A strong cash position has been maintained and a satisfactory rate of interest is being earned on the funds held.

DIVIDEND

It has been decided that in future the dividend position of the Company will be considered in June and December each year.

VAN DYKS DRIFT COLLIERY

After placing £2,402 to Abnormal Costs Reserve, the working profit at the Colliery amounted to £203,296, which was substantially higher than the figure for the previous year. This was due to the increase in November, 1955 in the pit-head prices of all Transvaal and Orange Free State coal. The coal dispatched during the year totalled 685,392 tons, which was a decrease of 21,103 tons compared with the corresponding figure for the previous year. The supply of railway trucks was inadequate, a condition which has continued into the current year, during the first three months of which despatches of coal amounted to 170,249 tons as compared with 173,008 tons for the corresponding period of last year. Capital expenditure in 1956 totalled £4,150, which was incurred mainly on a new ventilation shaft that was sunk in the eastern area of the property. Against this there was a credit of £600 in respect of sales of equipment, leaving a net capital expenditure figure of £3,550. The Pneumoconiosis Act, 1956, came into force as from August 1, 1956, and provides, *inter alia*, for increased payments to beneficiaries and for a widening in the scope of compensation.

INVESTMENTS

The list of the Company's principal investments was extended by the inclusion of the shareholding in Winterveld (T.C.L.) Chrome Mines (Proprietary) Limited. The valuation of investments that are quoted on the Stock Exchange increased by £17,305 to £464,174, while the book value of unquoted investments increased by £96,614 to £173,560 due to the acquisition of further shares in Platinum Prospecting Company (Proprietary) Limited, and to the Company's aforementioned interest in Winterveld (T.C.L.) Chrome Mines (Proprietary) Limited, which was incorporated during the year under review. Dividends on share investments totalled £47,932 during the year.

EAST RAND PROPRIETARY MINES, LIMITED

(Incorporated in the Union of South Africa)

The Sixty-first Ordinary General Meeting of shareholders was held in Johannesburg on May 7, 1957. The following is an extract from the circulated statement by the Chairman, **Mr. W. M. Frames,** dated April 30, 1957.

WORKING RESULTS

The ore milled during the year totalled 2,548,000 tons, an increase of 8,000 tons compared with the previous year's figure. The average yield at 5.192 dwt. per ton milled was 0.267 dwt. higher and, as a consequence, the gold recovered increased by 36,054 ounces to 661,494 ounces fine. A slight increase in the average amount received by the Company for gold together with the higher yield resulted in an increase of 3s. 6d. per ton milled, equivalent to £463,764, in the working revenue which totalled £8,322,465 for the year. Although working costs at 48s. 3d. were 2s. 3d. per ton milled higher, the working profit at £2,173,528 reflected an increase of £160,409.

ACCOUNTS

To the working profit of £2,173,528 was added the sum of £61,170, being the excess of sundry income over expenditure as detailed in the Income and Expenditure Account, giving a total profit of £2,234,698. After allowing for taxation amounting to £646,504 there remained a sum of £1,588,194 to be added to the unappropriated balance of £1,023,010 brought forward from 1955, giving a total of £2,611,204. From this amount £554,410 was transferred to Capital Reserve in respect of expenditure on mining assets and trade investments and £891,000 was paid in dividends, leaving a balance to be carried forward in the Income and Expenditure Account of £1,165,794. This unappropriated balance, together with revenue reserves totalling £195,777, was represented by current assets of £2,929,266 less liabilities and provisions amounting to £1,567,695, as disclosed in the Balance Sheet.

PNEUMOCONIOSIS

The proportion of the outstanding liabilities under the Pneumoconiosis Act, 1956, which the Company would be called upon to pay in order to meet future pneumoconiosis compensation in the event of the mine being closed down has been finally determined at £693,318, a decrease of £15,201 compared with the previous apportionment as at March 31, 1955.

DEVELOPMENT

The footage developed at 53,586 feet represented an increase of 7,226 feet as compared with the previous year. A total of 18,280 feet was sampled averaging 252 inch-dwt., the payable portion amounting to 8,200 feet or 44.9 per cent with an average value of 16.3 dwt. over a channel width of 28 inches equal to 456 inch-dwt.

The payable ore developed amounted to 1,044,200 tons of an average value of 8.3 dwt. per ton. This represented an increase of 118,500 tons compared with the previous year's figure ; the average value, however, was 0.8 dwt. lower. The higher grade zones below the 58th level in the central area of the mine again contributed largely to the payable ore developed.

Of the 4,550 feet sampled in the pilot winzes during the year, 53 per cent proved payable at an average value of 448 inch-dwt.

The Far East Ventilation Shaft was sunk to a depth of 4,962 feet below the surface by December 31, 1956, and work preparatory to the sinking of the sub-vertical portion of this shaft has been started.

ORE RESERVE

The available ore reserve at the year-end totalled 4,170,000 tons or 339,000 tons less than a year earlier. At 7.0 dwt. the average value of the available ore reserve was 0.4 dwt. higher and the width at 45.2 inches was 0.6 inch greater.

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